

Hackman, C.D.
1967

Field Notes

March 20

Lisianski Island

Landed on the island around 9 am in the Whale boat. Spent until 1:30 p.m. making a complete island circuit with Gene + Ernie in order to census and tag seals + turtles. Returned to camp and ate a quick lunch before heading out to measure eggs.

The thick growths of Scaevola make walking a chore, especially when combined with the large number of shearwater-petrel burrows on the island. The soil on this island is the finest sand I've encountered on any island and the burrows come in easily. Normally, as light as I am, I can skitter across the tops of burrows without caring too many of them in. This was not true on Laysan and certainly isn't true on this island. About halfway across the island a burrow caved in while I was measuring a Red-footed Booby egg and I cracked my knee against one of the Scaevolas. The knee turned black + blue almost immediately but didn't hurt very much.

Since ~~the~~ we were scheduled to leave the island at 5:00 pm there wasn't time enough for a complete survey of the island or anything more than a cursory check of the various bird populations. In the 3 1/2 hours I barely managed to run a fairly decent survey of the southern half of the island.

Saw several banded birds but couldn't capture them - both Red-footed Boobies.

The whaleboat returned at 4:30 p.m. instead of at 5 pm as scheduled so I was unable to get more than 12 sets of Blue-faced Booby egg measurements. During the 3 hours I was able to get measurements of eggs + nest descriptions for: 17 Hawaiian Noddy, 20 Great Frigate, 20 Grey-b. Tern, 18 Red-footed Booby, 13 Blue-faced Booby and Fairy Terns. Had to check over 200 nests for these measurements. The majority of Red-footed Boobies were on nests but only 18 birds, of 85 nests checked, had eggs. Had to check 60 Great Frigate nests to get 20 egg measurements.

As with other island populations, on this trip, we are a little too early. Most birds are on fresh or barely incubated eggs. Sooty Terns are swimming but not down during the day. The Blue-faced Boobies are the exception to this statement. On Lisianski we found one large downy young and four (4) small downy young in addition to four nests with small naked chicks.

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Field Notes

March 20

Lisianski Island

Vegetation was fairly lush. Eragrostis, Portulaca and Tribulus were all in full bloom. The downwood trees and dense growths of Scaevola were in good condition as were the two coconut trees (we drank the milk from two coconuts + planted another).

During the island circuit we found several very small turtles which we tagged. These turtles could be easily picked up + carried by one man. Aside from the several we tagged another five or six of similar size were observed in the water.

We saw no sharks around the inshore reef nor did John and Dick who did a great deal of diving in several areas. When we returned to the ship we learned that there had been what they described as "two hundred" around the ship. At least 25 had been shot with an M-1 rifle and had been seen to sink. The crew of the ship seemed to have enjoyed the day.

We were back on the ship by 5:10 pm and heading for Pearl + Hermes by 6 pm.

Sacked out at 8:15 p.m.

March 21

Pearl + Hermes Reef

(Next page)

Itinerary - March Seeward

Depart Honolulu 10:15 am March 6
 Arrive Nawiliwili Harbor 8:30 p.m. March 6
 Depart Nawiliwili Harbor 8:15 a.m. March 7
 Arrive Nihoa Island 0530 March 8, land on island 0945
 Depart Nihoa Island 1040 March 9
 Arrive Necker Island 10:40 March 10
 Depart Necker Island 5:15 p.m. March 10
 Arrive French Frigate Shoals 8:30 am March 11
 Depart French Frigate Shoals 5 p.m. March 14
 Arrive Gardner Pinnacles 8:30 March 15
 Depart Gardner Pinnacles 8:45 March 15
 Arrive Laysan Is. 8:30 March 16 loaded, March 18
 Depart Laysan Is. 2:30 p.m. March 19
 Arrive Lisianski Is. 9:00 am March 20
 Depart Lisianski Is. 4:30 pm March 20
 Arrive Pearl + Hermes Reef March 21 10 am
 Depart Pearl + Hermes Reef March 23 2:30 pm
 Arrive Midway Island March 24 2:15 p.m.
 Depart Midway March 26 12:30 am
 Arrive Kure March 26 12:00 p.m.
 Depart Kure March 30 3:30 p.m.
 Arrive Midway March 30 3:55 p.m.
 Depart Midway April 1 4:45 pm. Midway Time
 Arrive Honolulu April 1

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 1967

Field Notes

March 23 Southeast Is., Pearl + Hermes Reef
 odds + ends:

When we first arrived here we found a note from
 Char Robbins who had come down from Midway by helicopter.
 It seems they were caught in the storm that blew over
 that down + had to spend the night on North Island inside
 the helicopter. They had started toward Midway but were
 forced back by strong head winds. A plane had to fly down
 from Midway the next morning to drop fuel + oil for the
 choppers so they could make the return trip in the helicopter.

This morning I saw an orange streamer frigate at
 close range flying up from an area in which a number of nests were
 located. I waited around the area but the bird did not return. It
 was impossible to determine if this bird was just loafing in company of
 the breeding birds or whether it was actually breeding on Southeast Is.

Left the island to return to the ship at 2:30 p.m.
 along with John and the major portion of our gear. Gene
 Craig + Dick remained behind to spray the mustardweed
 in hopes of eradicating it.

As soon as I got on the ship I unloaded my locker
 back into the trunk + tried to pack all of my gear before
 Gene returned with his boat. When Gene returned he
 saw an adult Ring-billed Gull + yelled for me to
 bring the shotgun. I was down in the forward hold packing
 my second trunk full of gear + no one seemed to know where I
 was - not that it made any difference since the shotgun + ammo
 were both stored down in the bottom of the first trunk that had
 been packed.

At 6 pm. the ship pulled anchor + steamed toward
 Midway Island.

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Species Account

Black-footed Albatross (Diomedea nigripes)

March 19 Laysan Island

~~No~~ No counts made on this island because of early, unexpected departure. A rough guesstimate would be entirely inadequate because large segments of the island were not even walked through. In general the Black-foot nests were along the beach crest and in one sandy area (extensive) along the northeast shore of the island. Population easily exceeded 10000 birds and there were large numbers of chicks.

March 20 Lisianski Island

Incomplete survey. No counts were made due to insufficient time on the island. The impression obtained by walking the beach crest and by a partial survey of the northern end of the island was that this species was not very abundant, perhaps 1000 or so but this would be pure speculation.

March 21-23 Southeast Is. Pearl + Hermes Reef

Chick count: 1560. Most nests were around the island perimeter although a few were scattered here and there through the interior - particularly in the vicinity of the small lagoon.

March 22 Grass Island, Pearl + Hermes Reef

Chick count - 1466. Mostly on the beach. ~~But~~ Few birds were found in the vegetation.

March 22 Seal Is. Pearl + Hermes Reef

Chick count 325. None in the vegetation.

March 22 Kittery Island, Pearl + Hermes Reef

Chick count 417. No vegetation on island to speak of.

March 16 North Is. P+H Reef (Counted by Chandler S. Robbins)
Chick count 1150.

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Species Account

Black-footed Albatross (Diomedea nigripes)

March 24-25 Midway Atoll

No attempt to make estimates since Chen Robbins has been here working on albatross for 3 months. ~~and~~ Didn't have time for a full survey of both islands.

March 26-30 Green Is., Kure Atoll

Started a chick count along the beach crest on the afternoon of the 26th and completed it at noon on the 27th. See map on next page for comparison of these totals with those obtained by Chandler S. Robbins during a visit on 9-10 February 1967 with Dr. Van Harris.

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Species Account

Laysan Albatross (Diomedea immutabilis)

March 19 Laysan Island

No estimate or counts made of chicks because of the early + unexpected departure from the island. Judging from what was seen there must be close to 30,000 or so chicks on the island.

March 20 Lisianski Island

No estimate made due to short visit + limited time for a survey. Population probably in several thousand adults with nestlings.

March 21-23 Southwest Is., Pearl + Hermes Reef

Chick count 5300. Most nests off the beach crest into the interior of the island.

March 22 Green Is., Pearl + Hermes Reef

Chick count - 25. 350 nests had been abandoned on this island for an unknown reason. Rotten eggs were everywhere.

March 22 Seal Is., Pearl + Hermes Reef

Chick count 34. About 175 abandoned nests were found.

March 22 Kittery Is., Pearl + Hermes Reef

Chick count - 48

March 16 North Is., Pearl + Hermes Reef ~~Counted by Charles~~

Chick count 500 made by Charles S. Robbins.

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Species Account

Laysan Albatross (Diomedea immutabilis)

March 24-25 Midway Atoll

This species is everywhere one looks: on lawns, on the golf course, under thick vegetation, on the runways, on the roads, etc, etc. Impossible to even begin guessing at the total population. No time to survey either island in anything other than a haphazard manner.

March 26-30 Green Is., Kure Atoll

Started checking the interior for Laysan chicks in the afternoon of the 27th but was stopped by winds + rain for several hours. See map on next page with comparison of these totals with those obtained by Charles S. Robbins on 9-10 February 1967.

On the morning of the 27th on the west end of the runway near the bird sock I found an extremely small Laysan chick. It was 3 1/2 inches high sitting relaxed (head down) and 6" long (sitting). The bird was completely covered with down. It was being brooded by a young adult when first found.

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Species Account

Wedge-tailed Shearwater (Puffinus pacificus)

March 20 Lisianski Island

None observed during a daylight visit (9-5)

March 21-23 Southwest Is., Pearl + Hermes Reef

About 40-50 birds roosting on the island at night and in the early morning. Not very noisy at present. A few birds found exploring burrows. ~~Not~~ ^{a few} paired at present.

March 22 Grass Is., Pearl + Hermes Reef

None observed. Burrows on island show no sign of fresh digging.

March 22 Seal Island, Pearl + Hermes Reef

None observed. Burrows present on island but no signs of recent digging.

March 25 Eastern Is., Midway Atoll

Saw about 6 birds deep under Scaevola thickets during a short visit.

March 26-30 Green Is., Kure Atoll

Found about 8 birds on the ground in the north antenna field. None were paired. No birds were found in burrows. Several were heard calling (March 26).

Checked out 9 ~~the~~ birds and found 1 with a band during the evening of March 27.

Picked up 7 of 9 birds seen and found four banded on the evening of March 29.

C. D. Hackman

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Species Account

Christmas Is. Shearwater (Puffinus nativitatis)

March 8 Nihoa Island

1 bird flying east along south side of island while first boat load was heading in toward the landing

March 10 Necker Island

Gene Knittle saw 1 bird near the landing area.

March 13 Trig Is., French Frigate Shoal

2 birds found in shallow burrow under Lepturus

March 14 Whole-Shute, FF Shoals

None observed

March 18 Laysan Island

About 25 birds were found, mostly under Scaevola, on the NW corner of the island. Most birds were calling. All were above ground. No eggs were observed although a number of the birds were paired. Some birds around lagoon.

March 19 Laysan Island

More than 70 birds were seen around a rock shelf along the north beach around 9:30-10 am while conducting a survey for seals. These birds were all exposed (sunning the sides) so it is likely that the population in this area was double or possibly triple the number of birds that were observed. Another small group of birds was found along the south + southwest beaches.

March 20 Lisianski Island

About 20 birds were scattered here and there under dense growth of Scaevola. None found in burrows. No eggs or chicks were observed. Paired birds were common.

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Species Account

Bonin I. Petrel (Pterodroma hypoleuca)

March 20 Lisianski Island

None observed in burrows or over the island during the short daylight visit. Hundreds observed over the ocean, apparently moving toward the island, as we departed around 5 p.m. No fresh burrowing was observed.

March 21-23 Southwest I., Pearl + Hermes Reef

Numerous birds on the ground and in burrows during the night. None observed during the day. At night (both nights) about 150 birds were observed - mostly above ground. Numerous burrows were inspected but no eggs or chicks were found.

March 22 Shoal, Seal + Kittery I., Pearl + Hermes Reef

None observed. Many burrows found, some of which may have been made by this species, but none appeared to be fresh.

March 25 Eastern I., Midway Atoll

None observed during a daylight visit.

March 24-26 Sand I., Midway Atoll

Numerous small colonies there and there in residential areas (1 behind BOQ and the quarters area, 1 near Harty Field, one near the boat harbor were the only ones observed). These except for the one near the boat harbor are being slowly eradicated by increasing human activity. Very few birds were found in the other areas where they were formerly very common.

March 26-30 Green I., Kure Atoll

Large numbers of birds in the air but few on the ground in the antenna field. Full moon made the birds difficult to capture. Found 2 birds in a burrow - no eggs or chicks. ~~Checked~~ Checked 41 birds and found 1 banded (March 26).

Many birds on the ground tonight - perhaps due to the gusty winds. Checked out 150 birds and found 8 banded birds (March 27).

Checked out 58 birds and found 4 banded ones (March 28).

Many in flight over the antenna field.

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Species Account

Bulwer's Petrel (Bulweria bulwerii)

March 7

1 bird at sea on edge of feeding flock

March 8 Nihoa Island

4 heard calling after dark - south side - in burrows

Could not determine breeding status because all birds found were deep in burrows under rocks but suspect that they are presently courting. Birds were giving a long involved call note much unlike the coo-coo-coo note I'm familiar with.

Ship's crew commented about a number of small black birds on the ship during the night - probably this species.

March 10 Necker Island

None were observed but we weren't on the island during the night. Probably on the island but deep in burrows during this visit.

March 11-14 French Frigate Shoals

None observed.

March 18 Laysan Island

About 20 birds calling (full call) on the north end of the island from burrows with Ipomoea sp. Most burrows observed were shallow. These birds threw up stomach oil when handled which I've never seen this species do before. No paired birds were observed + no eggs were found in the few burrows found + checked. One bird was heard calling down near the lagoon on the west side of the island.

March 20 Lisianski Island

None observed during a daylight visit (9-5)

March 21-23 Pearl + Hermes Reef

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Field Notes

Bulwer's Petrel (Bulweria bulwerii)

March 24-25 Midway Atoll

None observed or heard during this short visit.

March 26-30 Green Is., Kure Atoll

None observed.

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1967

Species Account

Sooty Storm Petrel (Oceanodroma markhami)

14 March Whale - Skate, FF Shoals

2 chicks: 1 very small + downy + 1 about 3/4 grown with primaries out of ~~gout~~ sheaths found in shallow burrows under grass.

18 March 18 Laysan Island

Gene Kemble found one bird near the lagoon + collected it. Saw several others near lagoon.

March 20 Laysan Island

None observed during a daylight visit. (9-5)

March 21-23 Southeast Island, Pearl + Hermes Reef

Birds were found on the ground and in burrows in the interior of the island. No eggs found. About 10 downy chicks (with primaries just out of sheaths) were found in various burrows. Total population ~~about~~ ~~several~~ several hundred. About 7 birds were observed but none were captured because of the moonlight. Population several hundred.

March 24-26 Midway Atoll

None observed or heard.

March 26-30 Green Is., Kure Atoll

None observed.

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Species Account

Red-tailed Tropicbird (Phaethon rubricauda)

March 14 Whale-Shale, French Frigate Shoals
None found nesting or on the ground. Four birds in flight around the island.

March 14 Trig Is., FF Shoals
Three flying around island.

March 17 Offshore Laysan Island

Birds counts of the island at noon: 18 birds in flight.

March 18 Laysan Island

About 30 birds observed in flight as we landed & set up camp. No complete count was made due to other activities. Several w/ eggs.

March 19 Laysan Island

A midday count of the eastern half of the island turned up 28 birds in flight over the island.

March 20 Lizianski Island

About 20 birds in the air over the island counting. Only 2 birds observed on the ground. No eggs or chicks were found.

March 21-23 Southeast Island, Pearl + Hermes Reef

Birds paired & counting vigorously throughout this visit. Two birds were found on eggs under a pile of ~~barrel~~ barrels along with 6 other birds. One bird was stationed under a Scaevola during the entire visit but had no egg upon our departure.

March 22 Grass Island, Pearl + Hermes Reef
1 bird in flight over the island. No nest found.

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Species Account

Red-tailed Tropicbird (Phaethon rubricauda)

March 8 Nihoa Island

15-20 in air midday. Several birds were seen under rocks by various party members but no eggs or chicks were seen. Suspect that no one, including me, checked very hard.

March 10 Necker Island

Saw only 10-15 birds in the air during the 6 hour visit. No nests or birds on the ground were observed by the party. These ~~may~~ may have been well down the steep slopes where none of us ventured.

March 11 Tern Island, French Frigate Shoals

Saw 2 birds while releasing ~~that~~ Nihoa Funnies. One of the Coast Guard boys told me they had just come back after being absent for several months. He couldn't remember how long they had been absent.

March 11 East Island, French Frigate Shoals

Saw three birds while walking around the island: 2 under a Messerschmidia and one under a piece of corrugated roofing. Plan to check breeding status & band them tomorrow. (1 bird on an egg)

March 12 East Is., French Frigate Shoals

Total of 6 birds in flight over the island at one time

March 12 Tern Island, French Frigate Shoals

3 birds flying around the island in late afternoon. A night survey of the island didn't turn up any on the ground.

March 13 Trig Island, French Frigate Shoals

None found nesting. Three flying over island.

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Species Account

Red-tailed Tropicbird (Phaethon rubricauda)

March 24-26 Midway Atoll

Hundreds in the air over Easter Island + scattered throughout the Scaevola. Several eggs were found + measured. Notes common on Sand Island. No survey was made.

March 26-30 Green Is., Kure Atoll

24 in the air on the afternoon of March 26 with much calling and displaying.

March 27 - on a circuit of the Northeast to south beach beaches about 7 birds were found under Scaevola - all were checked but none had eggs.

March 28 - checked out 20 birds in thick Scaevola around the North + east sides of the island + only found 1 egg. 16 birds in flight over the central roost at 2 p.m.

March 29 140+ birds in flight over eastern end of island and 85+ birds flying over western end of island at 1 p.m.

C.D. Hackman
1967

Species Account

Golden Plover (Pluvialis dominica)

March 8 Nihoa Island

5 singles, 1 group of 2 observed during the entire day

March 10 Necker Island

~~2 birds observed~~ 2 observed

March 11 Tern Island, French Frigate Shoals

Three birds observed on the runway in the vicinity of the mess hall.

March 11 East Island, French Frigate Shoals

11 Birds counted on a circuit of the island.

March 13 Trig Is., French Frigate Shoals

2 birds around beach

March 14 White - Skate, French Frigate Shoals

8 birds foraging on beaches around the island

March 19 Laysan Island

75 birds observed on a complete circuit of the island. 560 birds were counted on the NW corner of the lagoon. The majority of these were in the lagoon in 1"-3" deep water about 100-150 feet from shore. Only two of these birds were in full breeding plumage. About 20 birds were molting + had large black splashed on their breasts. The remainder were still in full winter plumage with no sign of molt. Total population probably exceeds 1200 birds.

Laysan Island

March 20

About 35 birds observed on a circuit of the beaches and a survey of the interior on the northern half of the island.

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Species Account

Golden Plover (*Pluvialis dominica*)

March 21-23 Southwest Is., Pearl + Hermes Reef
15-20 observed along the reef + in the small lagoon area.

March 22 Grass Island, Pearl + Hermes Reef
2 birds seen during short visit.

March 22 Seal Island, Pearl + Hermes Reef
2 birds observed during a short visit.

March 22 Kittery Is., Pearl + Hermes Reef
1 bird observed during a short visit.

March 24-25 Midway Atoll

March 26-30 Green Is., Line Atoll
12 birds observed on an island circuit (26 March)
1 bird in changing plumage observed near barracks.

C.D. Hackman
1967

Species Account

Ruddy Turnstone (*Arenaria interpres*)

March 8 Nihoa Island

Flocks of 17, 23 + 32 seen flying over water on southside of the island.

March 10 Necker Island

Several small flocks were observed 5+12 and 5 solitary birds were observed along the ridges. The flocks were in flight over Shark Bay.

March 11 Tern Island, French Frigate Shoals

48 birds observed on the runway near the mess hall

March 11 East Island, French Frigate Shoals

48 birds counted on a complete island circuit

March 13 Trig Is., French Frigate Shoals

41 birds counted on an island circuit

March 14 White-Islet, French Frigate Shoals

34 birds counted on island survey.

March 19 Laysan Island

250 birds around the beaches during a circuit of the island. 388 birds observed in the NW quarter of the lagoon along the shoreline (the majority) or in shallow water within 50 feet of the shoreline. Total population close to 800 birds.

March 20 Laysan Island

About 100 birds on the beaches + in the interior of the island.

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Species Account

Ruddy Turnstone (Arenaria interpres)

March 21-23 Southeast Is., Pearl + Hermes Reef
100+ birds scattered around the island.

March 22 Seal Is., Pearl + Hermes Reef
45 birds in one flock observed during a short visit.

March 22 Thurs Is., Pearl + Hermes Reef
80 birds observed in one flock during a short visit.

March 22 Kittory Island, Pearl + Hermes Reef
15 birds observed during a short visit.

March 24-25 Midway Atoll

March 26-30 Green Is., Kure Atoll
39 birds observed on an island circuit many others observed in clearings in the island interior. (26 March)

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Species Account

Wandering Tattler (Heteroscelus exilis)

March 8 Niihau Island
2 seen along ledges on south side of island near the landing

March 10 Necker Island

One bird was observed near the landing area.

March 11 Tern + East Is., French Frigate Shoals

Not observed

March 13 Tring Is., French Frigate Shoals
5 birds on a complete island circuit

March 14 Whale - Skate, French Frigate Shoals

2 birds seen on island survey.

March 19 Laysan Island
2 birds observed on an island circuit. 12 birds feeding in NW portion of the lagoon with the Golden Plovers.

March 20 Laysan Is., Laysan Island
Two birds observed on an island circuit.

March 21-23 Southeast Is., Pearl + Hermes Reef
2 birds observed.

March 22 Kittory Is., Pearl + Hermes Reef
1 bird observed during a short visit

March 22 Seal Is., Pearl + Hermes Reef
1 bird.

March 24-25 Midway Atoll

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Species Account

Bristle-thighed Curlew (*Numenius tahitiensis*)

March 8+9 Nihoa Island
None observed.

March 10 Necker Island
None observed.

March 11 Ten + ~~East~~ Is., French Frigate Shoals

None observed.
March 12 East Is., Fr. Frigate Shoals

1 bird
March 13 Trig Is., French Frigate Shoals

1 Bird
March 14 Whale-Shake, Fr. Fr. Shoals
None observed.

March 19 Laysan Island
One flock of 48 birds observed on the south beach during an island circuit. Single birds + small groups of two or three seen at several other locations. Total population about 60 birds.

March 20 Laysan Island
About 15 birds observed on the beaches and in the interior of the island.

March 21-23 Southwest Is., Pearl + Hermes Reef
One flock of 14 birds observed (23rd). Estimated island population 20-25 birds.

March 24-25 Midway Atoll
None observed. Chan Robbins has observed several off and on, since January 1967.

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Species Account

Sanderling (*Crocethia alba*)

March 11 Ten Island, French Frigate Shoals
6 observed feeding on runway near mess hall.

March 11 East Island, French Frigate Shoals

1 observed on west end of island. Bird landed + stayed only a few seconds before flying on toward the northeast.

March 13 Trig Is., French Frigate Shoals
3 observed along beach

March 14 Whale-Shake, Fr. Fr. Shoals
~~None observed~~ 3 on beach

March 14 Ten Is., Fr. Fr. Shoals
9 observed on runway and along NW beach.

March 19 Laysan Island
None seen on beaches. 8 birds on a small sand bar in lagoon.

March 20 Laysan Island
Eight birds observed on the west beach of the island.

March 21-23 Southwest Island, Pearl + Hermes Reef
2 birds observed.

March 27 Seal Island, Pearl + Hermes Reef
1 bird observed in a flock of Ruddy Turnstones.

March 24-25 Midway Atoll
None observed.

March 26-30 Green-Kure
None observed.

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Species Account

Hawaiian Monk Seal

March 20 Lisianski Island

| | |
|-------|------|
| AM | 54 |
| AF | 40 |
| AU | 8 |
| SM | 3 |
| SF | 5 |
| YM | 7 |
| YF | 5 |
| UY | 2 |
| UU | 2 |
| Pairs | - 11 |

1 After AF w/ afterbirth (?) from vagina.

Topped 37. Six pups

March 21-23 Pearl + Hermes Reef

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Species Account

Hawaiian Monk Seal

March 24-26 Midway Atoll
None observed.

March 26 Kure Atoll

14 Adult unknowns and 1 subadult unknown (?) observed from the plane on a small sandy islet to the south of Green Island while the plane was making its final landing approach. Also counted the following while checking the beach on 2/3rds of the island before dark:

SU (in water) - 1 + 1 on sand spit

AU (in water) - 2 + 14 on sand spit

AF w/ pups - 4

AF - 1 (bleeding from vagina.)

AM - 1

AU (dead + bloated) - 1

Pups - 4

Coast Guardsmen informed me that at least 3 pups have died on the island this year. One seal also had twins but both died the next day.

March 28 Kure Atoll

Saw 5 seals on north beach this morning:

AM - 7

AF } very fat + sluggish, pregnant?

AF - in scaevola.

AU - 2 in water.

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Species Account

Turtle species

March 9 Nihoa Island
1 large, greenish turtle in cove near landing spot
as we

March 10 Necker Island
Three were sunning on the edge of Shark Bay. Two
of these were successfully flipped and tagged. Several
smaller turtles were also seen around the island.

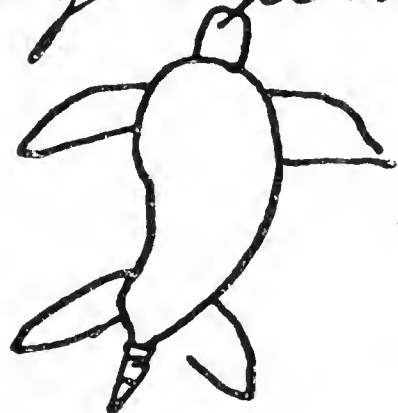
March 11 East Is., French Frigate Shoals

One medium-sized Turtle was observed offshore
for several hours in the afternoon.

March 13 Trig Is., French Frigate Shoals

Managed to flip + tag ¹³ of 23 turtles.
Most were very large males. One female ~~was~~
~~had~~ had a serious infection or inflammation in its
eye. A male had a large portion of its left rear
flipper missing. Another male was deformed on its
left side - with a large depression:

Recaptured 2 turtles
that were previously
tagged.



March 14 Whale-Shale, Fr. Fr. Shoals
None observed

March 14 Trig Is., Fr. Fr. Shoals

Flipped + tagged an additional 15 turtles out of
23 that were on the beach.

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Species Account

Turtles

March 14 Whale-Shale, Fr. Fr.
None

March 17 off Laysan Island

One large turtle was ~~seen~~ observed from the ship around
1:30 pm.

March 19 Laysan Island

2 large turtles were observed on the beaches during a
complete island circuit. One large male was flipped + tagged.

March 20 Laysan Island
Tagged 9 new + ~~recaptured~~

March 21-23 Southeast Is., P+H Reef
Recovered 5 + tagged 10 new.

March 26 Midway Atoll

Saw 4 while flying over the lagoon en route to
Kure Atoll.

March 26-30 Green Is., Kure Atoll

None observed.

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March 8

Nihoa Island

Large black ant is abundant on open ground and under vegetation. Runs rapidly in an erratic manner when disturbed.

This species was also observed on French Frigate Shoals but was not seen on Necker Island (no thorough search was made) or the more northern islands of the chain. This species or one very similar to it is common on some of the islands in the Phoenix Group.

Large reddish ant was found only in crevices or holes on large pieces of coral rubble and was very slow in its movements. The ant appeared reluctant to move far from the cover provided by the holes and crevices in the coral rock.

Small reddish ant was collected from the same piece of coral rubble as was the larger one.

The ant with the light, transparent abdomen was found under an overturned rock.

All specimens were taken in the old Polynesian ruins $\frac{1}{3}$ of the way ~~to the~~ to Tanager Peak.

No other types were encountered but time was limited and no great effort was made.

March 10

Necker Island

Saw but did not collect a small black ant while censusing bird populations. After a light rain shower I could not find any ants. Had to depart shortly after this.

March 11-14

French Frigate Shoals

Collected at least 4 types but left vial on the island. Several Smithsonian field men will visit the island in Mid-May + will have instructions to return this vial to Honolulu if it can be located.

Laysan + Lisianski

Premature departure from Laysan precluded collection of ants. Very short visit to Lisianski - too many other activities.

Southeast, Pearl + Hermes Reef

Forgot to collect specimens.

Hackman, C.D.
1967

March 29

Green Island, Kure Atoll

Found a large number of ants on the fresh carcass of a Great Frigatebird (Fregata minor) and trailed them back to their nest - under a rock. All specimens in the vial marked #1 were taken from the bottom surface of the rock. Many eggs were found - some collected.

Specimens in Vial #2 were taken from the carcass of the Frigatebird.

Specimens collected at the request of Dr. John Maciolek, Bureau of Commercial Fisheries, Cooperative Fisheries Program, for a man named _____, at the Univ. of Hawaii who is studying ants in the Leeward Island Chain with hopes of revising + clarifying the taxonomy.

Hackman, C.D.
1967

Egg Measurements

Blue-faced Booby (*Sula dactylatra*)

March 20

Lisianski Island

All nests on beach crest on bare sand. All with slight depression.

All measurements in millimeters:

Sex incubating

Measurements

male

46.65 x 68.3 ; 46.5 x 74.6

male

47.65 x 72.3 ; 47.25 x 67.95

female

46.2 x 63.35 ; 45.3 x 63.95

female

47.4 x 65.8

male

43.7 x 63.2 ; 45.5 x 63.1

male

46.1 x 65.75 ; 46.85 x 65.7

female

47.4 x 69.65 ; 46.1 x 71.8

unknown

43.95 x 64.35

female

48.45 x 72.9 ; 48.85 x 65.85

male

45.6 x 66.1 ; 46.5 x 66.2

female

47 x 66.7 ; 45.75 x 61.8

male

45.7 x 65.4 ; 44.7 x 47 x 62.55 (odd shape)

female

46.6 x 66.5 ; 47 x 65.5

One bird had a two egg clutch as it rapidly departed.
Both had fairly well developed chicks but one was about twice the size of the other.

Egg Measurements + Nest Descriptions

Red-footed Booby (*Sula sula*)

March 20

Lisianski Island.

All nests were in Scaevola from 1 foot to 4 1/2 feet in height. Construction was primarily of Tribulus with small amounts of Scaevola + Boerhaavia.

Checked out 85 nests, all new construction all with sprigs of fresh vegetation. Only 18 had eggs.

All measurements in millimeters:

39.2 x 60.0

40.4 x 61.5

42.2 x 63.1

42 x 58.3

40.8 x 67.7

42.5 x 64.9

41.55 x 63

42.25 x 61.8

39.5 x 56.5

41.55 x 62.45

41.75 x 63.8

38.2 x 63.3

41.1 x 65.6

39.55 x 62.65

41.8 x 66.5

40.3 x 64.6

41.8 x 64.25

39.7 x 62.7


Hackman, C.D.
1967

Egg measurements + Nest Description

Great Frigatebird (Fregata minor)

March 20 Lisianski Island

All nests in Scaevola, 15" to 34" high. Nest diameter 12" - 18". Construction almost exclusively of Tribulus with occasional pieces of Portulaca + Boerhaavia.

| Egg measurement | Sex incubating | Condition of egg |
|------------------|----------------|--|
| 46.35 x 68.2 mm | male | fresh |
| 46 x 82.1 mm | male | opaque, shape:  |
| 49 x 73.4 mm | female | fresh |
| 49.95 x 70.55 mm | male | opaque |
| 45.9 x 68.3 mm | female | fresh |
| 50.8 x 70.6 mm | male | — |
| 46.5 x 73.8 mm | female | — |
| 47.6 x 67.7 mm | female | fresh |
| 47.5 x 69.55 mm | male | fresh |
| 47.35 x 70.25 mm | male | opaque |
| 46.5 x 70.1 mm | male | fresh |
| 45.3 x 70.4 mm | male | fresh |
| 45.1 x 68 mm | male | fresh |
| 47.6 x 73.85 mm | male | opaque |
| 47.85 x 68.5 mm | male | fresh |
| 47.4 x 67.5 mm | female | fresh |
| 50.5 x 73.6 mm | female | opaque |
| 49.55 x 69.3 mm | male | fresh |
| 47.35 x 69.2 mm | unknown | fresh |
| 47.65 x 69.0 mm | unknown | opaque |

Eggs were candled against the unobscured sun. Fresh eggs appeared pinkish in this light.

Hackman, C.D.
1967

Egg measurements.

Gray-backed Tern (Sterna lunata)
March 20 Lisianski Island

All nests under Scaevola and morning glory on sandy soil
all measurements in millimeters:

33.5 x 46.4

31.5 x 43.9

32.5 x 44.7

32.8 x 46.2

33.1 x 48.7

33.65 x 47.35

32.9 x 43.15

33.5 x 46.2

33.75 x 48.65

32.9 x 42.55 egg broken - barely incubated

32.15 x 45.35

33.8 x 45.45

32.15 x 46.15

33.4 x 43.15

33.6 x 47.35

34.1 x 42.55

32.95 x 46.2

33.0 x 46.9

31.25 x 43.4

32.7 x 45.65

all eggs were in slight depressions
in sandy soil.

Hackman, C.D.
1967

Measurements + Nest Description

Hawaiian Noddy Tern (Anous tenuirostris)

March 20

Lisianski Island

Nest in Ironwood (Casuarina)

| Egg dimension | Height | Width | Depth | Nest Materials + Comments |
|---------------|---------|---------|--------|--|
| 32.8 x 45.8 | 55" | 8" | 5" | <u>Scaevola</u> leaves, grass, <u>Portulaca</u> , Portuguese man-of-war, some seaweed. |
| 30.7 x 46.5 | 54" | 7 x 10" | 5 1/2" | <u>Tribulus</u> , <u>Scaevola</u> , grass |
| 38.2 x 44.6 | 10' | 5" | 2 1/2" | " " " on this branch |
| 31.6 x 45.3 | 7" | 7" | 6" | Egg cold + dirty, prob. abandoned. |
| 30.3 x 43 | 5" | 7 1/2" | 5" | Grass, morning glory |
| 30.55 x 48.3 | 4" | 5 1/2" | 4" | Egg cracked + dirty, prob. abandoned. |
| 30.5 x 42.9 | 53 1/2" | 6 1/2" | 4" | Same material as 2nd nest, also used <u>Boerhaavia</u> . |
| 32.8 x 46.9 | 34 1/2" | 6 x 8" | 5" | |
| 31.8 x 42.8 | 37" | 6" | 4" | |
| 32.3 x 44.5 | 38" | 9 x 13" | 3 1/2" | Grass, morning glory + <u>Casuarina</u> . |
| 32.5 x 45.4 | 38" | 6" | 4" | Egg dirty, prob. abandoned. |
| 31.9 x 43.3 | 21" | 6" | 4 1/2" | Same as 2nd nest. |

Nests in Scaevola

30.8 x 46.95
31.5 x 44.5
31.9 x 46.15
32.85 x 47.15
31.6 x 44.3

egg piped

All nests in Scaevola of grass + morning glory construction, ranged in height from 18" - 32".

All egg measurements are in millimeters.

Hackman, C.D.
1967

Egg Measurements

White Tern (Gygis alba)

March 20

Lisianski Island

31.5 x 42.3 mm. about 11 inches above ground on ironwood branch (Casuarina)

Hackman, C.D.
1967

Species Account

Blue-faced Booby (Sula dactylatra)

March 19 Laysan Island

Two birds were loafing along the northern beach at 10 am. No nests were found around the beach crest. Only 1 nest was found on the entire island although the east + southern portions of the island were not carefully surveyed due to lack of time. No roosting club was heard or seen.

March 20 Laysan Island

Nesting along the beach crest around entire island. None observed in the interior of the island. Partial count of the beach crest for 2/3rds of the island (made while tagging seals + turtle):

Adult ~~birds~~ with:

2 eggs - 27 (one with a pipped egg)

1 egg - 10

1 egg + 1 chick - 0

Adult male with:

2 eggs - 10

1 egg - 5

1 egg + 1 chick - 3

Unknown nests not checked - HHHHHH

One large downy chick and four small downy chicks were observed. Four nests were found with small naked chicks ^{one} of which ~~contained~~ contained 2 naked chicks - just hatched today.

March 21-23 Southwest Island, Pearl + Hermes Reef

Sixteen nests found:

AM 2 eggs - 4

AM 1 egg - 1

AF - 2 eggs - 7

AU - 2 eggs $\frac{4}{16}$

No chicks were observed.

Hackman, C.D.
1967

Species Account

Blue-faced Booby (Sula dactylatra)

March 22 Grass Island, Pearl + Hermes Reef

One bird observed on island. No nests.

March 22 Seal Island, Pearl + Hermes Reef

23 nests as follows:

AF on 2 eggs - 12

AF on 1 egg - 2

AM on 2 eggs - 3

AM on 1 egg - 2

AU unknown contents - 4

No chicks were hatched. All birds were on open coral sand or in coral rubble away from vegetation.

March 22 Kittery Island, Pearl + Hermes Reef

Else nests were observed but not checked for contents. No chicks were observed. All nests were ~~on~~ on sandy beach.

March 25 Easton Is., Midway Atoll

Several nesting in a restricted entry area. The nests were not checked for content.

March 26-30 Green Is., Line Atoll

22 birds ~~seen~~ observed in antenna field - many of these nesting. Birds were difficult to work in the full moonlight. The bird one handled hit through the glove + lacerated a finger stopping all handling for the night (26 March)

(27 March) Checked nests + measured eggs in South Antenna field

March 28 Worked all the birds in the North Antenna field. None that were observed escaped - the birds seemed reluctant to fly for some reason. Captured + marked 78 returns. During the day the nests were surveyed in this area and in the south antenna field and found ~~23~~ ²³ nests in both areas as follows:

South Antenna field:

AM 2 eggs - 3

AU - 1 egg 1

AF - 2 eggs 1

AF 1 egg - 1

6 eggs + 1 immature

Species Account

Brown Booby (*Sula leucogaster*)

March 18 Laysan Island

None were found along beach on NW quarter of island during a five hour survey after dark.

March 19 Laysan Island

One bird was loafing on a rock shelf on the SW corner of the island. The only one observed during the stay.

March 20 Laysan Island

15 birds were loafing along the north shore and several others were found in the interior. No nests or young were observed.

March 22 Seal Island, Pearl + Hermes Reef

Three birds observed flying from the island. No nests.

March 21-23 Southeast Isd., Pearl + Hermes Reef

Twenty-one nests were found as follows:

Adult male on 2 eggs - 2

Adult male on 1 egg - 1

Adult female on 2 eggs - 11

Adult female on 1 egg - 4

Adult female w/ small naked chick - 1

Empty nests, new construction - 2

21

Several immature birds roosted on the island. One immature fished in the small lagoon for several hours in the morning without apparent success. This bird made repeated dives, in series, from altitudes of 2 to 5 feet.

March 24-25 Midway Atoll

None observed.

March 26-30 Green Is., Kure Atoll

One bird on a nest with one egg on a small dirt pile (bulldozed) on the edge of the Scrub in the interior.

Three birds in flight at the same time. Both male + female were at the nest.

Hackman, C.D.
1967

Species Account

Brown Booby (*Sula leucogaster*)

March 28 Green Is., Kure Atoll

Found 3 active nests today + may have found another tonight in ~~the~~ near the north antenna field.

All three nests found this afternoon contained 2 eggs and all were described + nests + eggs measured.

There are at least 20-25 adults and 1 subadult on the island at present.

Hackman, C.D.
1967

Species Account

Red-footed Booby (Sula sula)
March 18 Laysan Island

approach in the moonlight in the thick, crackly ~~Scaevola~~
Scaevola. Several pairs were sleeping on nests but
no eggs or chicks were observed. Total island population
probably around 150 birds at the present time.

March 20 Laysan Island

About 130 birds present on the entire island most
with nests. Of 85 nests checked only 18 contained eggs.
The other nests all contained fresh vegetation. Nest construction
primarily of Tribulus and small amounts of Boerhaavia and, in one
nest Scaevola. Nests ranged in height from 1 foot to 4 1/2 feet.

March 21-23 Southwest Island, Pearl + Hermes Reef

27 nests: 9 with eggs (1 pipped)
10 with chicks
8 empty, new construction

27

Chicks ranged in size from just hatched to large downy
with no feathers (9 1/2"). Construction was in Scaevola or on the
ground in Solanum. (See measurements + description section).
Roosting population about 65 birds.

March 25 Eastern Is., Midway Atoll

Hackman, C.D.
1967

Species Account

Red-footed Booby (Sula sula)

26-30 March Green Is., Kure Atoll

An afternoon count (3:30 p.m.) turned up 79 birds in
the central roost area. An evening count in the
turned up 82 birds in ~~that~~ ^{the} area. (March 26) ^{near the radar reflector.}

March 28 - an early afternoon count of the central
roost area (2:00 pm) found 64 birds sitting in Scaevola.
Started to check breeding status this afternoon but had
to stop when male frigates destroyed a nest every time
I chased an adult away. Saw 1 nest with an egg
completely demolished within a matter of minutes.

March 29 - all attempts to work this species failed.
The species is just beginning its nesting cycle and birds
are not yet to the point where they'll sit tight as one
approaches (literally crashes) through the Scaevola.
Birds were flying at an approach of 15-100 feet. None
were captured. No heavy birding was observed during
this visit during several nights of roost inspection.

Hackman, C.D.
1967

Species Account

Great Frigate (Fregata minor)

March 17 Offshore Laysan Island

Binocular count at dawn - several thousand birds in the air. Majority of birds seen from the ship were immatures + females. Some observed feeding on garbage from the ship but only after it had floated several hundred yards from the ship. None came close to the ship. One adult female observed chasing a Red-footed Booby but results of chase could not be determined because of distance + heavy swells.

March 18 Laysan Island

No complete survey was attempted because of other activities. Numerous males displaying. A large number of birds on nests along west side of island all on Scaevola. Plan to survey there tomorrow. No banded birds were found during a check of the NW quarter of the island.

March 19 Laysan Island

Had to pull off island before a complete survey could be run. Birds are presently on eggs and empty nests. The majority of eggs are presumably fresh although ~~some~~ ^{some} were checked. Population on island is close to 2000 birds.

March 20 Laysan Island

About 300 flying immatures near the ~~south~~ ^{south} end of the island and a few in the interior perched on ~~Scaevola~~ ^{Scaevola}. A large number of males were displaying on empty nests of new construction. Of 60 nests checked only 30 contained an egg. Of 18 nests where the sex of the incubating bird could be determined 12 were males. Sixteen of 18 eggs that were checked were fresh. Nest construction was of tubular and all nests were located in Scaevola.

Total nests about 200-250 on the entire island on the basis of an incomplete survey. Nests ranged in height from 1 foot to 3 feet.

C.D. Hackman
1967

Species Account

Great Frigatebird (Fregata minor)

March 8 Nihoa Island

Scattered all over island in little clusters probably 7-8,000 birds. Checked 21 nests ^{with eggs} and found ~~9~~ ² of the eggs to be clean, pinkish when candle (against sun) and the rest were dirty and opaque (well incubated?). A large number of immatures, 2-3,000 are present, many still on nests. No small young observed.

Of 31 birds sitting on nests:

11 males on eggs
10 females on eggs
4 males on empty nests
6 females on empty nests.

March 10 Necker Island

About 200 nests scattered around the island. Birds were found in little clusters on Chenopodium around the edges of the ridges. A number of nests were found on the same slope as the bulk of the Red-footed Boobies in the Chenopodium. This plant species was used for the nest. The majority of nests were new construction but empty. Only 37 of 100 had eggs.

March 11 East Island, French Frigate Shoals

No nests. About 45 birds, mostly females + immatures were sitting on the east side of the island during the afternoon. About the same number roosted on the island.

March 13 Trig Island, French Frigate Shoals
1 fled over island - an immature.

March 14 Whale-Shale, French Frigate Shoals

Forty-six immatures were sitting in the nesting colony - many on old looking nests.

166 new nests were found as follows 166:
male on nest: empty - 17 1 egg - 63
female on nest: empty - 4 1 egg - 31
unk sex on nest: empty (new) - 38 1 egg - 13
all eggs that were checked (24) were fresh.

Hackman, C.D.
1967

Species Account

Great Frigatebird (*Fregata minor*)

21-23 March Southeast Is., Pearl + Hermes Reef

Saw one adult female with an orange streamer attached to the left leg. Bird was sitting with a group of resting + counting frigates but I could not determine if it had a nest. The bird failed to return during a 35 minute wait near the nesting area.

48 nests as follows:

Adult female on egg - 10
Adult female on empty nest - 6
Adult male on egg - 16
Adult male on empty nest - 14
Empty, new construction - 2
48

The eggs were all candled (against direct sunlight) and all but two were opaque and dirty.

There was a great deal of counting during this visit.

March 25 Eastern Is., Midway Atoll.

Hackman, C.D.
1967

Species Account

Great Frigatebird (*Fregata minor*)

26-30 March French Is., Line Atoll

Afternoon count of birds in northern portion of the island at 3:20 pm - 139 on ~~French~~ Scaevola and 38 flying. A considerable amount of counting, twig carrying, pouch inflation and some nest robbing (for sticks) was observed. (26 March).

March 28 An afternoon count of the central roost area turned up 114 frigates (29 in flight). Spent about 40 minutes watching of this species destroy nests after I had chased birds off in order to check breeding status. I noticed that the birds did not bother a nest if it contained an egg but would immediately destroy the one if it was empty. Several female frigates refused to move from their nests even though they were empty and in spite of my showing them around + lifting them up in the air.

The majority of the birds involved (14 of 18) in this nest destruction were subadult males. These subadults would move in rapidly as soon as a bird left an empty nest and one after another would fly over and grab a handful of the nest. Several adult males also made passes + took some vegetation but not in the same manner as the subadults. The subadults appeared to be doing this for keiches. After making a strike + picking up some vegetation the bird would fly a few feet, drop the vegetation, wheel around and get in line for another pass at the nest. The adults involved in this pilfering appeared to be using the material ~~for~~ for counting or nest construction since all flew away with the vegetation. Several of these adults were observed landing at distant nests that appeared to be occupied by females.

In view of the damage that would be caused by running through the entire colony chasing all birds off their nests I stopped taking measurements + surveying nests.

Before the main marauding started I checked 12 nests with the following results:

AM

1 egg - 3
empty (new) - 2

AF

1 egg - 2
empty (new construction) - 6

Hackman, C.D.
1967

Species Account

Sooty Tern

March 12 East Is., French Frigate Shoals

After last night's driving rain and 40 mph winds (estimated) the Sooty population has been cut to a fourth of its former size. Only the birds on eggs remained on the island (about 5,000).

March 13 Trig Is., French Frigate Shoal

Fifty birds were on the ground on the ^{west} end of the island in Syzygium. These birds were reluctant to fly even when closely approached. They were probably ready to lay.

March 14 White - Skate, French Frigate Shoals

About 150 birds on the north end of the island. No eggs were found. Birds were reluctant to fly when approached.

March 14 Trig Island, French Frigate Shoals

Fifteen fresh eggs were found among the 50 or so birds that were observed yesterday on the north end of this island.

March 17 Offshore Laysan Island

Small groups of 3-6 birds flying passed ship throughout the day. No concentration observable from the ship during a complete circuit of the island in the morning.

March 18 Laysan Island

A swirl of about 4,000 birds was over the South end of the island at dusk (+ in the late afternoon). During a check of the NW quarter of the island a small group of about 200 was found on the ground in a bare, sandy area between dense sections of Scaevola. Three banded birds were captured out of this group all 903 series. No eggs were found.

Hackman, C.D.
1967

Species Account

Sooty Tern (*Sterna fuscata*)

March 20 Laysan Island

About 5,000-8,000 birds swirling over the island. No nests were found during this short, daylight visit.

March 21-23 Southwest Is., Pearl + Hermes Reef

Between 2,000 (daylight) and 5,000 (night) birds swirling over the island. No eggs were found.

Birds were on the ground during the second night on the island but no eggs were found on the morning of the 23rd. The birds were coming down in bare areas between mustardweed, Sicyos and Solanum.

March 25 Eastern Is., Midway Atoll

March 26-30 Green Is., Kure Atoll

About 75 birds around the island during the day. In the evening about 500 birds swirling and chattering off the eastern end of the reef. None down at night (26 March).

March 28 Only a few seen today. Strong, gusty winds appeared to have scattered the small swirling flock that was observed on the two previous nights as they weren't heard or observed this evening.

C.P. Hachman
1967

Species Account

Gray-backed Tern (Sterna lunata)

March 8 Nihoa Island

Several Eggs, no chicks found. ~~The~~ The species appeared to be very common and distributed all over the island. Gene Krindle commented that they commonly nested in the gullies to the west of our campsite but I didn't get one there to check. Population is at least 1,000 ~~and probably 1,000 or more~~.

March 10 Necker Island

Difficult to assess population because the birds were nesting down the cliff walls around the island. No chicks were found. Only about 10 eggs were found. Two of these ~~were~~ were "cuckoo" and were only slightly incubated. Population - at least 2000 birds ~~and probably 2,000 or more~~.

March 11 East Island, French Frigate Shoals

Four birds were observed during the afternoon during a circuit of the island. None observed or heard at night.

March 13 Trig Is., French Frigate Shoals

15 birds scattered around island. No nests found.

March 14 White - Shale French Frigate Shoals

75-100 birds scattered over the island in little groups of 2-10 birds. Most birds behaved as if they had eggs but only 1 egg was found.

Hachman
1967

Gray-backed Tern (Sterna lunata)

March 17 Offshore Laysan Island

Occasional birds seen or heard calling from the ship throughout the day.

March 18 Laysan Island

Numerous small groups of from 5 to 50 along the north + west shores in the NW quarter of the island. These small groups were normally in or around Scaevola and clumps of grass. No banded birds were observed among the approximately 400 birds observed after dark.

March 19 Laysan Island

Found a small colony with eggs ~~in~~ around a series of rock shelves on the southwest beach while making the circuit of the island on a seal census. Saw 15 eggs but had no time to check them. Had to pull off the island before measurements could be made. Total island population exceeds 1000 birds.

March 20 Laysan Island

Small groups of nesting birds scattered here and there under Scaevola. Three groups of birds yielded a total of 26 eggs. Total island population appears to be around 200 birds at the present time. One egg that was broken had been barely incubated. Nests were on bare ground in slight depressions made in the sandy soil. Several hundred on south end of island.

March 21-23 Southeast Is. Pearl + Hermes Reef

About 75 birds on the island in several locations - on the ground during the day. No eggs were found as the result of several careful searches. Birds are courting.

March 22 Seal Is. Pearl + Hermes Reef

25 birds on a rocky area on the north end of the island. No nests or eggs were found.

Hackman, C.D.
1967

Species Account

Gray-backed Tern (*Sterna lunata*)

March 25 Eastern Is., Midway Atoll

March 26-30 Green Is., Kure Atoll

19 birds calling in flight along northeastern beach
at 1:30 p.m. No nests found around beach (26 March)

C.D. Hackman
1967

Species Account

Blue-Gray Noddy (*Procelsterna caerulea*)

March 8 Mihoo Island

Eggs to half grown chicks. Birds were most abundant on the cliffs around the edges of the island where most of the nests were difficult or impossible to check. Have no idea how large population is but the species is abundant. Population at least several thousand.

March 10 Necker Island

Only a few eggs and several small chicks were found because this species nested along the cliff walls in inaccessible areas. Couldn't even begin to survey there in six hours. Population probably exceeds 2-3000 birds. Most chicks downy. 1 chick about, week from fledging.

March 11-14 ~~East Island~~ French Frigate Shoals

Not present

March 18 Laysan Island
None observed.

March 20 Laysan Island
None observed during a short daylight visit.

March 21-23 Pearl + Hermes Reef
None observed.

March 24-25 Midway Atoll
None observed.

March 26-30 Green Is., Kure Atoll
None observed.

C.D. Hackman
1967

Species Account

Noddy Tern (*Anous stolidus*)
March 8 Nihoa Island
1 downy young, 1 egg, most chicks $\frac{1}{2}$ to $\frac{3}{4}$

grown. ~~lots~~ ^{knills}. Saw about 20 chicks under rocks mostly. Gene ~~Smith~~ found a fair number of eggs here and there. Have no ideas regarding total population although it must amount to several thousand birds.

March 10 Necker Island
None were observed.

March 11 East Island, French Frigate Shoals

Found 33 nests on a partial circuit of the island toward dusk. All but 7 had eggs. Birds were on all 33 nests. One egg - accidentally broken - was barely incubated. Roosting population about 300 birds.

March 12 East Island, French Frigate Shoals

Found 15 additional nests for a total of 45 nests on the island.

March 13 Trig Is., French Frigate Shoals

37 nests were found. Total number present: 175 birds.

March 14 Whale Skate, French Frigate Shoals

117 nests with fresh or barely incubated eggs. One egg, broken by a bird as it left the nest, was fresh. One $\frac{3}{4}$ grown chick was observed. About 1,000 adults were sitting on the beaches in four large groups.

March 15 Gardner Pinnacle

Several hundred birds were in flight over the island as we passed by around 800 yds to the north.

Hackman, C.D.
1967

Species Account

Noddy Tern (*Anous stolidus*)

March 17 Offshore Laysan Island

Several birds observed flying from island in the morning. None observed through the remainder of the day.

March 18 Laysan Island

Several hundred roosting on *Scaevola* around the north + west shores during an after dark check of the NW quarter of the island. These birds were quite alert + difficult to approach. Only one bird with a band was observed but this was about 20 feet into dense *Scaevola* where it could not be approached + captured. ~~No count~~ (Total island population close to 1000 birds at the present time.) 1 bird with an egg. No count made.

March 20 Lisianski Island

Only about 75 birds were observed. No nests or young were found during a partial survey of the northern half of the island.

March 21-23 Southeast Is., Pearl + Hermes

9 birds found roosting on the island (night of 21st). No nests were found.

March 22 Grass Is., Pearl + Hermes Reef

1 nest found on beach crest on south end of island with egg. Only 1 bird was observed.

March 22 Seal Is., Pearl + Hermes Reef

9 on beach.

March 25 Midway Atoll

Hackman, C. D.
1967

Species Account

White-capped Tern (Anous tenuirostris)

March 19 Laysan Island

Five or six birds were carrying nesting material into the Ironwood tree near camp. Several had what appeared to be leaves from Ipomea sp.

March 20 Nisikaraki Island

Birds found resting in Ironwood (Casuarina) which they seem to prefer and Scaevola. In all stages from new nest construction to nearly fledged young. About 30 nests with eggs, 5 with small downy young & 10 with nearly fledged young were observed. These northern birds do not employ plants from the reef as much as the ones on the southern islands (Phoenix + Line Is.) do perhaps because such plants aren't as abundant here. Materials used: Scaevola, Eragrostis, Tactilus, Boerhaavia and several types of seaweed. One nest of recent construction contained five small Portuguese man-o-war. The majority of nests were saddled on branches in forks. One nest was found nearly suspended in the "vee" of several small branches suspended in a manner that is reminiscent of the Red-eyed Vireo (Vireo). Leaves from a morning glory were also used in construction of the nest. Total population around 350 adults to 500 adults.

March 21-23 Southeast Is. Pearl + Hermes Reef

5 birds roosting on island (night of 21st). Occasional birds observed during the day. No nests.

March 21-23 Pearl + Hermes Reef

None on island other than Southeast, P + H Reef

March 24-25 Sand Is., Midway Atoll

Hackman, C. D.
1967

Species Account

White-capped Noddy (Anous tenuirostris)

March 26-30 Green Is., Kure Atoll

15 Observed over the lagoon (south side) during the morning hours (March 28). The CG personnel say that a large number roost on one end of the runway (east) every night but several trips ~~past that~~ passed that area have not ~~found them~~ located them.

C.D. Hackman
1967

Species Account

White Tern (*Gygis alba*)

March 8 Nihoa Island

Nests down on cliffs couldn't check breeding status. Not enough observations for population estimate. Population probably several ~~hundred~~ hundred to a thousand.

March 10 Necker Island

A few birds with eggs were observed along the higher ridges and cliffs. Most birds were located along the steeper cliff areas where the nests couldn't be easily checked.

Population appears to be around ~~500~~ ²¹⁰⁰⁰ birds. Here found some small downy young on NW cape.

March 11 Tern Island, French Frigate Shoals

About 15 birds around Coast Guard mess. Entire island was not surveyed.

March 11 East Island, French Frigate Shoals

None present.

March 13 Trig Is., French Frigate Shoals

None present.

March 14 White-Skate, Fr. Fr. Shoals

None present.

March 17 Offshore Laysan Island

Two birds observed flying west from island in the early morning but none for remainder of the day.

March 18 Laysan Island

Only about 8 birds were observed during an after dark check of the NW quarter of the island. One bird had a $\frac{3}{4}$ grown nestling that was on a rock near the west shore on the edge of a dense growth of *Scaevola*. All birds observed after dark except one on a

Hackman, C.D.
1967

Species Account

White Tern (*Gygis alba*)

March 18 Laysan Island
rocks) were ~~not~~ looting on *Scaevola* sp.

March 19 Laysan Island

About 100 birds were observed on a complete circuit of the island. One bird on an egg and 3 birds with $\frac{1}{2}$ grown young were found.

March 20 Laysan Island ^{tel on oral count.}

About 40 birds on the entire island. Only 1 egg, 11 birds on a dead branch of an Ironwood (*Casuarina*) about ~~100~~ above the ground. One adult observed feeding a white nestling.

March 21-23 Southeast Is., Pearl + Hermes Reef

Several birds were observed around the island during the visit. No nests were found.

March 22 Star Island, Pearl + Hermes Reef

Two birds sitting on an exposed shelf on the edge of the reef. No nests were observed.

March 24-25 Sand Is., Midway Atoll

Hackman, C.D.
1967

Species Account

Phalarope species - Red Phalarope [REC]

22 March

Southeast, Pearl + Hermes Reef

A desiccated skin was found in the interior of the island by Gene Knolle. Bird was found in a patch of wild mustard

C.D. Hackman
1967

Species Account

Black-footed Albatross (Diomedea nigripes)

March 6 Oahu to Kauai

16 birds following the ship at one time about half way across the channel (1:00 p.m. - 3 pm). All but two birds were immatures. Some birds flying to within 20 feet of the fantail

March 7 Within Sight of Kauai, Nihoa + Lehua Rock to dusk
Birds travelling along with ship all day long.

Maximum number - 20 birds at 1740

March 8 Nihoa Island

5 birds around ship at daybreak

March 10 Necker Island

Approx 75 birds with 25-30 nestlings all about $\frac{1}{4}$ - $\frac{1}{2}$ grown. These are scattered here and there among the nesting Laysan Albatross.

March 11, East Is. Fr. Fr. Shoals

772 chicks, all stages. No eggs.

March 13, Trig Is. French Frigate Shoals

Adults 38, chicks 51

March 14 Whale - Skate, FF Sh.

431 ch

Hackman, C.D.
1967

Species Account

Black-footed Albatross (Diomedea nigripes)

March 19 Laysan Island

~~March 19~~ No counts made on this island because of early, unexpected departure. A rough guesstimate would be entirely inadequate because large segments of the island were not even walked through. In general the Black-foot nests were along the beach crest and in one sandy area (extensive) along the northeast shore of the island. Population easily exceeded 10000 birds and there were large numbers of chicks.

March 20 Laysan Island

Incomplete survey. No counts were made due to insufficient time on the island. The impression obtained by walking the beach crest and by a partial survey of the northern end of the island was that this species was not very abundant, perhaps 1000 or so but this would be pure speculation.

March 21-23 Southeast Is., Pearl + Hermes Reef

Chick count: 1560. Most nests were around the island perimeter although a few were scattered here and there through the interior - particularly in the vicinity of the small lagoon.

March 22 Grass Island, Pearl + Hermes Reef

Chick count - 1466. Mostly on the beach. ~~But~~ Few birds were found in the vegetation.

March 22 Seal Is., Pearl + Hermes Reef

Chick count 325. None in the vegetation.

March 22 Kittery Island, Pearl + Hermes Reef

Chick count 417. No vegetation on island to speak of.

March 16 North Is., P+H Reef (Counted by Chandler S. Robbins)
Chick count 1150.

Hackman, C.D.
1967

Species Account

Black-footed Albatross (Diomedea nigripes)

March 24-25 Midway Atoll

No attempt to make estimates since Chan Robbins has been here working on albatross for 3 months. ~~and~~ Didn't have time for a full survey of both islands.

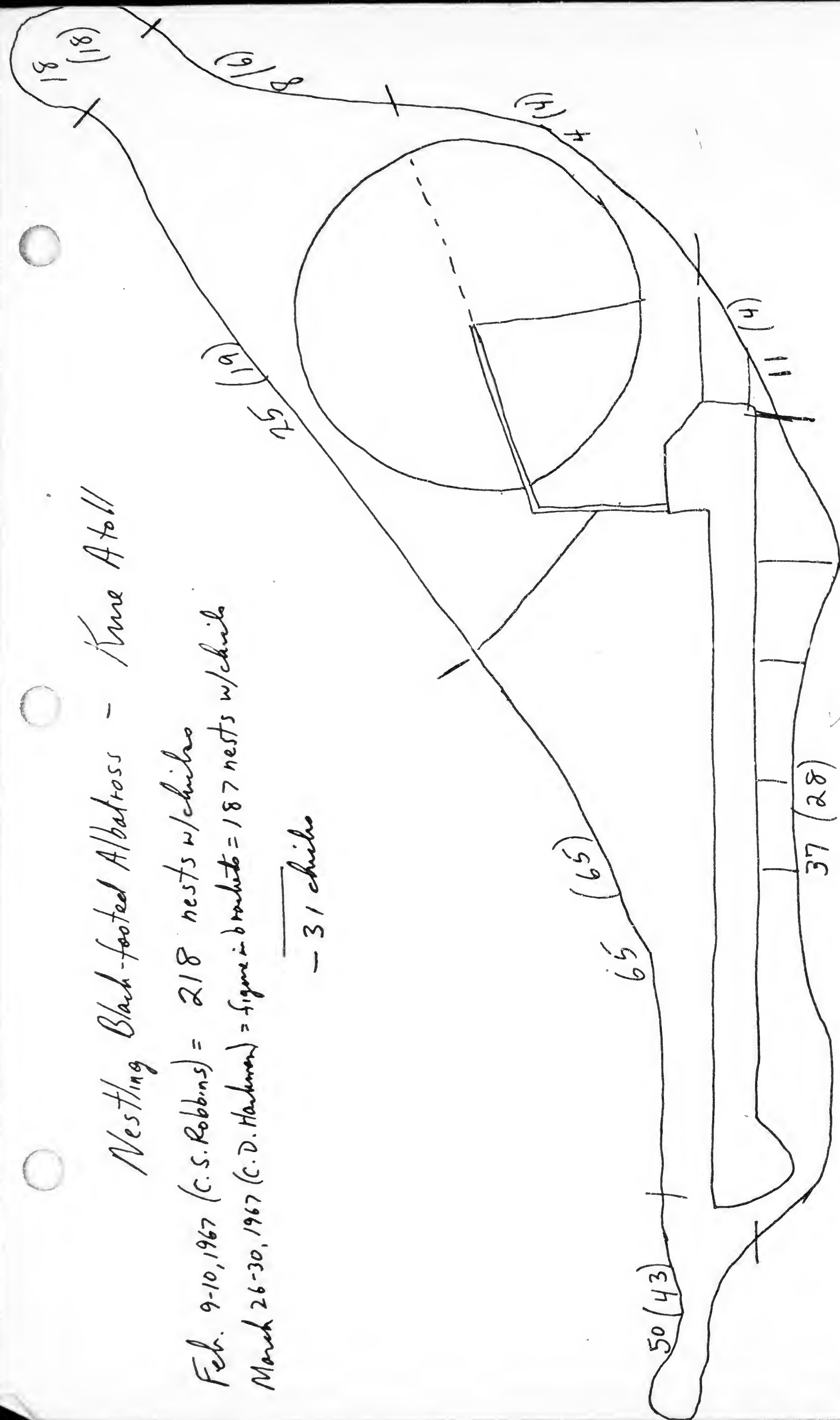
March 26-30 Green Is., Kure Atoll

Started a chick count along the beach crest on the afternoon of the 26th and completed it at noon on the 27th. See map on next page for comparison of these totals with those obtained by Chandler S. Robbins during a visit on 9-10 February 1967 with Dr. Van Harris.

Nesting Black-footed Albatross - Line Atoll

Feb. 9-10, 1967 (C.S. Robbins) = 218 nests w/chicks
 March 26-30, 1967 (C.D. Hackman) = figure in brackets = 187 nests w/chicks

- 31 chicks



C. D. Hackman
 1967

Species Account

Laysan Albatross (*Diomedea immutabilis*)

March 6

Two birds following the ship at a distance of $\frac{1}{2}$ to 1 mile for most of the day.

March 7

March 8 Nihoa Island

2 birds flying around ship at daybreak. 1 looper on island - south side

March 10 Necker Island

About 600 birds with 150-200 nestlings to $\frac{1}{2}$ grown. These birds were nesting mostly along the ridge but a few were also found on some of the rock shelves down the sides of the cliffs and slopes. No eggs were found.

March 11 East Is., FF Sh

~~200~~ chicks - 339, all stages, no eggs

March 13 Tring Island, French Frigate Shoals
 Adults 7, Chicks 10

March 14 Whale - Shoals, FF Shoals

Hackman, C.D.
1967

Species Account

Laysan Albatross (Diomedea immutabilis)

March 19 Laysan Island

No estimate ~~or~~ counts made of chicks because of the early + unexpected departure from the island. Judging from what was seen there must be close to 30,000+ or so chicks on the island.

March 20 Lisianski Island

No estimate made due to short visit + limited time for a survey. Population probably in several thousand adults with nestlings.

March 21-23 Southwest Is., Pearl + Hermes Reef

Chick count 5300. Most nests off the beach crest into the interior of the island.

March 22 Shoro Is., Pearl + Hermes Reef

Chick count - 25. 350 nests had been abandoned on this island for an unknown reason. Rather egg were everywhere.

March 22 Seal Is., Pearl + Hermes Reef

Chick count 34. About 175 abandoned nests were found.

March 22 Kittery Is., Pearl + Hermes Reef

Chick count - 48

March 16 North Is., Pearl + Hermes Reef ~~counted by Charles S. Robbins~~

Chick count 500 made by Charles S. Robbins.

Hackman, C.D.
1967

Species Account

Laysan Albatross (Diomedea immutabilis)

March 24-25 Midway Atoll

This species is everywhere one looks: on lawns, on the golf course, under thick vegetation, on the runways, on the roads, etc., etc. Impossible to even begin guessing at the total population. No time to survey either island in anything other than a haphazard manner.

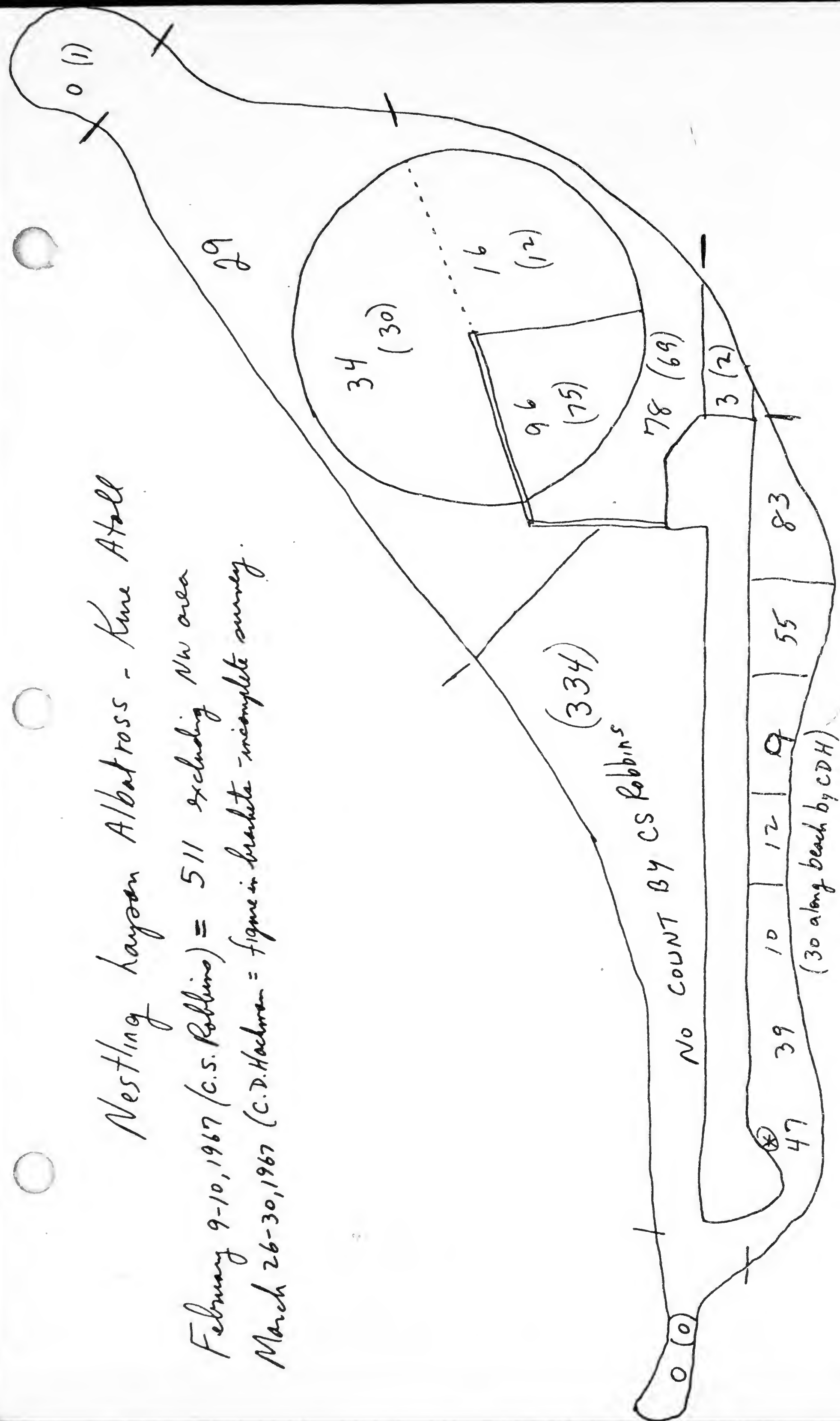
March 26-30 Green Is., Kure Atoll

Started checking the interior for Laysan chicks in the afternoon of the 27th but was stopped by winds + rain for several hours. See map on next page with comparison of these totals with those obtained by Charles S. Robbins on 9-10 February 1967.

On the morning of the 27th on the west end of the runway near the wind sock I found an extremely small Laysan chick. It was $3\frac{1}{2}$ inches high sitting relaxed (head down) and 6" long (sitting). The bird was completely covered with down. It was being brooded by a banded adult when first found.

Nesting Laysan Albatross - Kure Atoll

February 9-10, 1967 (C.S. Robbins) = 511 excluding NW area
 March 26-30, 1967 (C.D. Hackman) = figure in brackets - incomplete survey.



* Extremely small Laysan Chick (CDH)

C. D. Hackman
 1967

Species Account

Wedge-tailed Shearwater (*Puffinus pacificus*)

March 8 Nohoa

Several heard calling after dark. (Several seen). Only a few birds observed flying around the island, the evening. Impossible to estimate the island population.

March 9 Nohoa Island

Only 3 birds seen offshore shortly after daybreak

March 10 Necker Island

Saw about 10 birds in holes along top of ridge. No eggs were seen.

March 11 East Island, French Frigate Shoals

Saw about 6 birds while making several rounds of the island. Birds were on open ground and apparently are not breeding. Not paired.

March 13 Trig Is. French Frigate Shoals

None observed. No fresh diggings.

March 14 Whale Shale, FF Shoals

None observed. No fresh diggings

March 14 Tern Is. FF Shoals

None observed. No fresh diggings.

March 17 Laysan Island

Four birds seen in ocean around west end of island.

March 18 Laysan Island

Only 1 bird was found on the island in a chick of the NW quarter of the island. Several others were seen + heard near camp.

Hackman, C.D.
1967

Species Account

Wedge-tailed Shearwater (Puffinus pacificus)

March 20 Lisianski Island

None observed during a daylight visit (9-5)

March 21-23 Southwest Is., Pearl + Hermes Reef

About 40-50 birds roosting on the island at night and in the early morning. Not very vocal at ~~present~~ ^{a few} present. A few birds found exploring burrows. ~~Not~~ ^{not} paired at present.

March 22 Grass Is., Pearl + Hermes Reef

None observed. Burrows on island show no sign of fresh digging.

March 22 Seal Island, Pearl + Hermes Reef

None observed. Burrows present on island but no signs of recent digging.

March 25 Eastern Is., Midway Atoll

Saw about 6 birds deep under Scaevola thickets during a short visit.

March 26-30 Green Is., Kure Atoll

Found about 8 birds on the ground in the north antenna field. None were paired. No birds were found in burrows. Several were heard calling (March 26).

Checked out 9 ~~the~~ birds and found 1 with a band during the evening of March 27.

Picked up 7 of 9 birds seen and found four banded on the evening of March 29.

C.D. Hackman
1967

Species Account

Christmas Is. Shearwater (Puffinus nativitatus)

March 8 Niihau Island

1 bird flying east along south side of island while first boat load was heading in toward the landing

March 10 Necker Island

Gene Knicker saw 1 bird near the landing area.

March 13 Trig Is., French Frigate Shoal

2 birds found in shallow burrow under Lepturus

March 14 White-Start, FF Shoals

None observed

March 18 Laysan Island

About 25 birds were found, mostly under Scaevola, on the NW corner of the island. Most birds were calling. All were above ground. No eggs were observed although a number of the birds were paired. Some birds around lagoon.

March 19 Laysan Island

More than 70 birds were seen around a rock shelf along the north beach around 9:30-10 am while conducting a survey for seals. These birds were all exposed (sunning the albes) so it is likely that the population in this area was double or possibly triple the number of birds that were observed. Another small group of birds was found along the south + southwest beaches

March 20 Lisianski Island

About 20 birds were scattered here and there under dense growth of Scaevola. None found in burrows. No eggs or chicks were observed. Paired birds were common.

Hackman, C. D.
1967

Species Account

Christmas Island Shearwater (Puffinus nativitatus)

March 21-23 Pearl + Hermes Reef
None observed on any of the islands.

March 25 Eastern Is. Midway Atoll

Saw about 10 pair and a number of single birds under
Scaevola thickets.

March 26-30 Green Is., Kure Atoll

Saw 4 birds in flight over the runway at dusk.
Could not find any birds on the ground (March 26)

Saw two birds flying over the antenna field but none on
the ground on the evening of March 28.

C. D. Hackman
1967

Species Account

Bonin Is. Petrel (Pterodroma hypoleuca)

March 9 At Sea
1 bird flying past ship about 1 hour after
leaving Nihoa Island

March 12 Teen Island, French Frigate Shoals

Found a colony of about 500 birds actively counting
+ digging burrows. Some birds in burrows that were
about 3 feet long. No eggs were found in about 25
burrows that were checked. Most birds were located
on the NE side of the island in the vicinity of the two tall
radio masts. Banded 100.

March 17 Laysan Island

Several Thousands in flight around island between dawn and
about 9 am. Very few during the rest of the day until
just about dusk 6:40 or so. At this time there were
large numbers moving back to the island.

March 18 Laysan Island

This species is everywhere on the island. Birds were
evenly distributed through the NW quarter of the island. Many
birds were calling + counting in flight at dusk. Numerous birds
on the ground were paired. Many are presently digging
burrows at present. One bird, found in a foot deep burrow on
the northern end of the island had a heavily incubated egg
which contained a well developed chick (about 5 days from hatching).
This egg was broken open when the burrow caved in under me.
The adult was dug out + released. Very few of the birds inspected
were banded (only a few near camp had bands.) The total population
is probably in excess of 10,000 birds.

Hackman, C.D.
1967

Species Account

Bonin I. Petrel (Pterodroma hypoleuca)

March 20 Lisianski Island

None observed in burrows or over the island during the short daylight visit. Hundreds observed over the ocean, apparently moving toward the island, as we departed around 5 p.m. No fresh burrowing was observed.

March 21-23 Southeast I., Pearl + Hermes Reef

Numerous birds on the ground and in burrows during the night. None observed during the day. At night (both nights) about 150 birds were observed - mostly above ground. Numerous burrows were inspected but no eggs or chicks were found.

March 22 Shoal, Seal + Kittery I., Pearl + Hermes Reef

None observed. Many burrows found, some of which may have been made by this species, but none appeared to be fresh.

March 25 Eastern I., Midway Atoll

None observed during a daylight visit.

March 24-26 Sard I., Midway Atoll

Numerous small colonies here and there in residential areas (1 behind BOQ and the quarters area, 1 near Hantley Field, one near the boat harbor were the only ones observed). These except for the one near the boat harbor are being slowly eradicated by increasing human activity. Very few birds were found in the other areas where they were formerly very common.

March 26-30 Green I., Kure Atoll

Large number of birds in the air but few on the ground in the antenna field. Full moon made the birds difficult to capture. Found 2 birds in a burrow - no eggs or chicks. ~~(March 26)~~ Checked 41 birds and found 1 banded (March 26).

Many birds on the ground tonight - perhaps due to the gusty winds. Checked out 150 birds and found 8 banded birds (March 27).

Checked out 58 birds and found 4 banded ones (March 28).

Many in flight over the antenna field.

C.D. Hackman
1967

Species Account

Bulwer's Petrel (Bulweria bulwerii)

March 7

1 bird at sea on edge of feeding flock

March 8 Nihoa Island

4 heard calling after dark - south side - in burrows

Could not determine breeding status because all birds found were deep in burrows under rocks but suspect that they are presently courting. Birds were giving a long involved call note much unlike the coo-coo-coo note I'm familiar with.

Ship's crew commented about a number of small black birds on the ship during the night - probably this species.

March 10 Necker Island

None were observed but we weren't on the island during the night. Probably on the island but deep in burrows during this visit.

March 11-14 French Frigate Shoals

None observed.

March 18 Laysan Island

About 20 birds calling (full call) on the north end of the island from burrows under Ipomea sp. Most burrows observed were shallow. These birds threw up stomach oil when handled which I've never seen this species do before. No paired birds were observed + no eggs were found in the few burrows found + checked. One bird was heard calling down near the lagoon on the west side of the island.

March 20 Lisianski Island

None observed during a daylight visit (9-5)

March 21-23 Pearl + Hermes Reef

Hackman, C.D.
1967

Field Notes

Bulwer's Petrel (Bulweria bulwerii)

March 24-25 Midway Atoll

None observed or heard during this short visit.

March 26-30 Green Is., Kure Atoll

None observed.

C.D. Hackman
1967

Species Account

Sooty Storm Petrel (Oceanodroma markhami)

14 March Whale - Skate, FF Shoals

2 chicks: 1 very small + downy + 1 about 3/4 grown with primaries out of ~~growth~~ sheaths found in shallow burrows under grass.

18 March 18 Laysan Island

Gene Kinsella found one bird near the lagoon + collected it. Saw several others near lagoon.

March 20 Laysan Island

None observed during a daylight visit. (9-5)

March 21-23 Seventeenth Island, Pearl + Hermes Reef

Birds were found on the ground as in burrows in the interior of the island. No eggs found. About 10 downy chicks (with primaries just out of sheaths) were found in various burrows. Total population ~~about 100~~ several hundred. About 7 birds were observed but none were captured because of the moonlight. Population several hundred.

March 24-26 Midway Atoll

None observed or heard.

March 26-30 Green Is., Kure Atoll

None observed.

Hackman, C.D.
1967

Species Account

Red-tailed Tropicbird (Phaethon rubricauda)

March 14 Whale-Shale, French Frigate Shoals
None found nesting or on the ground. Four birds in flight around the island.

March 14 Trig Is., FF Shoals
Three flying around island.

March 17 Offshore Laysan Island

Birds counts of the island at noon: 18 birds in flight.

March 18 Laysan Island

About 30 birds observed in flight as we landed + set up camp. No complete count was made due to other activities. Several w/ eggs.

March 19 Laysan Island

A midday count of the eastern half of the island turned up 28 birds in flight over the island.

March 20 Laysan Island

About 20 birds in the air over the island-counting. Only 2 birds observed on the ground. No eggs or chicks were found.

March 21-23 Southeast Island, Pearl + Hermes Reef

Birds paired + counting vigorously throughout this visit. Two birds were found on eggs under a pile of ~~bamboo~~ barrels along with 6 other birds. One bird was stationed under a Scaevola during the entire visit but had no egg upon our departure.

March 22 Grass Island, Pearl + Hermes Reef
1 bird in flight over the island. No nest found.

C.D. Hackman
1967

Species Account

Red-tailed Tropicbird (Phaethon rubricauda)

March 8 Nihoa Island

15-20 in air midday. Several birds were seen under rocks by various party members but no eggs or chicks were seen. Suspect that no one, including me, checked very hard.

March 10 Necker Island

Saw only 10-15 birds in the air during the 6 hour visit. No nests or birds on the ground were observed by the party. These ~~may~~ may have been well down the steep slopes where none of us ventured.

March 11 Tern Island, French Frigate Shoals

Saw 2 birds while releasing ~~that~~ Nihoa Funnies. One of the Coast Guard boys told me they had just come back after being absent for several months. He couldn't remember how long they had been absent.

March 11 Coast Island, French Frigate Shoals

Saw three birds while walking around the island: 2 under a Messerschmidia and one under a piece of corrugated roofing. Plan to check breeding status + band them tomorrow. (1 bird on an egg.)

March 12 Coast Is., French Frigate Shoals

Total of 6 birds in flight over the island at one time

March 12 Tern Island, French Frigate Shoals

3 birds flying around the island in late afternoon. A night survey of the island didn't turn up any on the ground.

March 13 Trig Island, French Frigate Shoals

None found nesting. Three flying over island.

Hackman, C.D.
1967

Species Account

Red-tailed Tropicbird (Phaethon rubricauda)

March 24-26 Midway Atoll

Hundreds in the air over Eastern Island + scattered throughout the Scaevola. Several eggs were found + measured. Notes common on Sad Island. No survey was made.

March 26-30 Green Is., Kure Atoll

24 in the air on the afternoon of March 26 with much calling and displaying.

March 27 - on a circuit of the Northeast to south beach about 7 birds were found under Scaevola - all were checked but none had eggs.

March 28 - checked out 20 birds in thick Scaevola around the North + east sides of the island + only found 1 egg. 16 birds in flight over the central coast at 2 p.m.

March 29 140+ birds in flight over eastern end of island and 85+ birds flying over western end of island at 1 p.m.

C.D. Hackman
1967

Species Account

Golden Plover (Pluvialis dominica)

March 8 Nihoa Island

5 singles, 1 group of 2 observed during the entire day

March 10 Necker Island

~~2 observed~~ 2 observed

March 11 Tern Island, French Frigate Shoals

Three birds observed on the runway in the vicinity of the mess hall.

March 11 East Island, French Frigate Shoals

11 Birds counted on a circuit of the island.

March 13 Trig Is., French Frigate Shoals

• 2 birds around beach

March 14 White-Skate, French Frigate Shoals

8 birds foraging on beaches around the island

March 19 Laysan Island

75 birds observed on a complete circuit of the island. 560 birds were counted on the NW corner of the lagoon. The majority of these were in the lagoon in 1"-3" deep water about 100-150 feet from shore. Only two of these birds were in full breeding plumage. About 20 birds were molting + had large black blotches on their breasts. The remainder were still in full winter plumage with no sign of molt. Total population probably exceeds 1200 birds.

Laysan Island

March 20

About 35 birds observed on a circuit of the beaches and a survey of the interior on the northern half of the island.

Hackman, C.D.
1967

Species Account

Golden Plover (Pluvialis dominica)

March 21-23 Southwest Is., Pearl + Hermes Reef
15-20 observed along the reef + in the small lagoon area.

March 22 Grass Island, Pearl + Hermes Reef
2 birds seen during short visit.

March 22 Seal Island, Pearl + Hermes Reef
2 birds observed during a short visit

March 22 Kittery Is., Pearl + Hermes Reef
1 bird observed during a short visit.

March 24-25 Midway Atoll

March 26-30 Green Is., Kure Atoll
12 birds observed on an island circuit (26 March)
1 bird in changing plumage observed near barnacles.

C.D. Hackman
1967

Species Account

Ruddy Turnstone (Arenaria interpres)

March 8 Nihoa Island

Flocks of 17, 23 + 32 seen flying over water on southside of the island.

March 10 Necker Island

Several small flocks were observed 5x12 and 5 solitary birds were observed along the ridges. The flocks were in flight over Shark Bay.

March 11 Tern Island, French Frigate Shoals

48 birds observed on the runway near the mess hall

March 11 East Island, French Frigate Shoals

48 birds counted on a complete island circuit

March 13 Tring Is., French Frigate Shoals

41 birds counted on an island circuit

March 14 Whale - Skate, French Frigate Shoals

34 birds counted on island survey.

March 19 Laysan Island

250 birds around the beaches during a circuit of the island. 388 birds observed in the NW quarter of the lagoon along the shoreline (the majority) or in shallow water within 50 feet of the shoreline. Total population close to 800 birds.

March 20 Laysan Is. Island

About 100 birds on the beaches + in the interior of the island.

Hackman, C.D.
1967

Species Account

Ruddy Turnstone (Arenaria interpres)

March 21-23 Southeast Is., Pearl + Hermes Reef
100+ birds scattered around the island.

March 22 Seal Is., Pearl + Hermes Reef
45 birds in one flock observed during a short visit.

March 22 Ass Is., Pearl + Hermes Reef
80 birds observed in one flock during a short visit.

March 22 Kittery Island, Pearl + Hermes Reef
15 birds observed during a short visit.

March 24-25 Midway Atoll

March 26-30 Green Is., Kure Atoll
39 birds observed on an island circuit many others
observed in clearings in the island interior. (26 March)

C.D. Hackman
1967

Species Account

Wandering Tattler (Heteroscelus incanum)

March 8 Nihoa Island
2 seen along ledges on south side of island
near the landing

March 10 Necker Island

One bird was observed near the landing area.

March 11 Tern + East Is., French Frigate Shoals

Not observed

March 13 Trig Is., French Frigate Shoals
5 birds on a complete island circuit

March 14 Whale - Skate, French Frigate Shoals
2 birds seen on island survey.

March 19 Laysan Island
2 birds observed on an island circuit. 12 birds feeding
in NW portion of the lagoon with the Golden Plovers.

March 20 Laysan Is. Island
Two birds observed on an island circuit.

March 21-23 Southeast Is., Pearl + Hermes Reef
2 birds observed.

March 22 Kittery Island, Pearl + Hermes Reef
1 bird observed during a short visit

March 22 Seal Is., Pearl + Hermes Reef
1 bird.

March 24-25 Midway Atoll

Hackman, C.D.
1967

Species Account

Wandering Tattler (Heteroscelus incanum)

26-30 March Green Is., Kure Atoll

Two birds observed on an island circuit (26 March)

One bird along north shore-morning (28 March)

Hackman, C.D.
1967

Species Account

Bristle-th. Curlew (Numenius tahitiensis)

26-30 March 1967 Green Is., Kure Atoll

2 birds observed throughout visit. Birds were always found in the interior of the island. (26 March)

2 birds in the interior (28 March)

C.D. Hachman
1967

Species Account

Bristle-thighed Curlew (Numenius tahitiensis)

March 8+9 Nihoa Island
None observed.

March 10 Necker Island
None observed.

March 11 Ten + ~~East~~ Is., French Frigate Shoals

None observed.

March 12 East Is. Fr. Frigate Shoals

1 bird

March 13 Trig Is. French Frigate Shoals

1 Bird

March 14 Whale-Shake, Fr. Fr. Shoals
None observed.

March 19 Laysan Island

One flock of 48 birds observed on the south beach during an island circuit. Single birds + small groups of two or three seen at several other locations. Total population about 60 birds.

March 20 Lisianski Island

About 15 birds observed on the beaches and in the interior of the island.

March 21-23 Southeast Is., Pearl + Hermes Reef

One flock of 14 birds observed (23rd.) Estimated island population 20-25 birds.

March 24-25 Midway Atoll

None observed. Chan Robbins has observed several, off and on, since January 1967.

C.D. Hachman
1967

Species Account

Sanderling (Crocethia alba)

March 11 Ten Island, French Frigate Shoals
6 observed feeding on runway near mess hall.

March 11 East Island, French Frigate Shoals

1 observed on west end of island. Bird landed + stayed only a few seconds before flying on toward the northeast.

March 13 Trig Is., French Frigate Shoals
3 observed along beach

March 14 Whale-Shake, Fr. Fr. Shoals
~~None observed~~ 3 on beach

March 14 Ten Is., Fr. Fr. Shoals
9 observed on runway and along NW beach.

March 19 Laysan Island
None seen on beaches. 8 birds on a small sand bar in lagoon.

March 20 Lisianski Island
Eight birds observed on the west beach of the island.

March 21-23 Southeast Island, Pearl + Hermes Reef
2 birds observed.

March 27 Seal Island, Pearl + Hermes Reef
1 bird observed in a flock of Ruddy Turnstones.

March 24-25 Midway Atoll
None observed.

March 26-30 Green-Kure
None observed.

C.D. Hackman
1967

Species Account

Nihoa Finch (Psittirosta cantans)

March 8 + 9 Nihoa Island

An abundant species. Saw close to 100 in a small area on the south side during the two days. Gene Knudt estimates a population of 25,000[±]. Many males singing. We captured 42 birds to transplant on Tem and East Islands, French Frigate Shoals. Found them difficult to capture in the heavy vegetation. In the cage, during transport, the birds readily ate cracked corn, oranges and sunflower seeds.

March 11 Tem Island, French Frigate Shoals

birds released near mess hall. All but one acted healthy and alert. One male behaved as if it had sustained a foot injury and was not alert. The other birds began foraging almost immediately after release. Several birds were seen eating sand bar grass about 20 minutes after release.

March 11 East Is., French Frigate Shoals

10 birds were released and immediately disappeared in the heavy growth of Tribulus. None were observed during the rest of the day.

March 12 East Is., French Frigate Shoals

2 female types observed on the albatross count.

March 13 Tem Is., Fr. Frigate Shoals

1 male + 1 female observed foraging near mess hall in the afternoon

March 14 Tem Is., Fr. Frigate Shoals

9 birds feeding under ironwood trees in early afternoon.

C.D. Hackman
1967

Species Account

Nihoa Millerbird (Acrocephalus familiaris)

March 8 + 9 Nihoa Island

Saw only 10 - 15 during the two days. A difficult species to see because it is secretive and not inclined to lengthy flight. Prefers to stay in low vegetation near the ground. A number were singing.

C.D. Hackman
1967

Species Account

Blue-faced Booby (Sula dactylatra)

March 8 N. Hoa Island

2 on each ledge halfway to top - south side.
seen to be only 2 on island at present.

March 10 Necker Island

Breeding birds were scattered along the ridges in the bare areas. Nests usually occurred in little clusters - sometimes 5-6 feet apart. Counted 108 nests:

- 43 w/ 2 eggs (also 2 nests w/ 2 eggs on NW cape)
- 23 w/ 1 egg (2 of these pipped)
- 1 w/ 1 egg + 1 naked chick
- 2 w/ small naked chicks
- 37 nests - unknown contents.

All birds were reluctant to leave their nests. Possibly because they are seldom disturbed or possibly because many were on eggs that were about to hatch. Found one bird with a light blue egg - about the color of the lines on standard notebook looseleaf paper.

Measured a number of eggs: 8 sets of 2 and 2 nests with one egg. Didn't have time to measure anymore because a downpour gummed up my calipers.

March 11 East Island, French Frigate Shoals

About 15 birds roosting on the island after dark. Captured 2 with bands + the rest spooked. Two of the birds observed were subadults. No nests.

March 13 Trig Island, French Frigate Shoals

Twenty-four nests: 6 w/ egg, 17 w/ 2 eggs + one with 1 egg and 1 naked chick. Most about half were banded but only managed to capture two in the daylight. There were 41 adults on the island.

Hackman, C.D.
1967

Species Account

Blue-faced Booby (Sula dactylatra)

March 14 Whale - Skate, French Frigate Shoals

53 birds present on island. Birds nesting on the beach and on the beach crest. A few birds also nesting in the interior of the island on bare spots between or around clumps of Messerschmidia. 47 nests as follows:

Adult male on nest:

2 eggs - 14

1 egg - 3

Adult female on nest:

2 eggs - 9

1 egg - 6

Unknown sex on nest:

2 eggs - 6

1 egg - 5

No chicks were found.

March 14 Trig Island, French Frigate Shoals

One of the two egg clutches observed yesterday hatched out this morning. Both naked chicks were still in the nest attended closely by a male. Both chicks were about the same size.

March 15 Lardner Pinnacles from 800 yds at sea.

7 birds flew out to look the ship over + followed us for about 45 minutes.

March 17 Offshore Laysan Island

Evening count of 9 birds returning to island from the west.

March 18 Laysan Island

A thorough check of the NW quarter of the island only turned up 70 birds - five of which were banded and 2 of which had been banded previously.

Hackman, C.D.
1967

Species Account

Blue-faced Booby (*Sula dactylatra*)

March 19 Laysan Island

Two birds were loafing along the northern beach at 10 am. No nests were found around the beach crest. Only 1 nest was found on the entire island although the east + southern portions of the island were not carefully surveyed due to lack of time. No roosting club was heard or seen.

March 20 Lisianski Island

Nesting along the beach crest around entire island. None observed in the interior of the island. Partial count of the beach crest for 2/3rds of the island (made while tagging seals + turtles): female

Adult ~~male~~ with:

2 eggs - 27 (one with a pipped egg)

1 egg - 10

1 egg + 1 chick - 0

Adult male with:

2 eggs - 10

1 egg - 5

1 egg + 1 chick - 3

Unknown nests not checked - HHHHH

One large downy chick and four small downy chicks were observed. Four nests were found with small naked chicks ^{one} of which ~~one~~ contained 2 naked chicks - just hatched today.

March 21-23 Southwest Island, Pearl + Hermes Reef

Sixteen nests found:

AM 2 eggs: 4

AM 1 egg - 1

AF - 2 eggs - 7

AU - 2 eggs $\frac{4}{16}$

No chicks were observed.

Hackman, C.D.
1967

Species Account

Blue-faced Booby (*Sula dactylatra*)

March 22 Grass Island, Pearl + Hermes Reef

One bird observed on island. No nests.

March 22 Seal Island, Pearl + Hermes Reef

23 nests as follows:

AF on 2 eggs - 12

AF on 1 egg - 2

AM on 2 eggs - 3

AM on 1 egg - 2

AU unknown contents - 4

No chicks were hatched. All birds were on open coral sand or in coral rubble away from vegetation.

March 22 Kittery Island, Pearl + Hermes Reef

Class nests were observed but not checked for contents. No chicks were observed. All nests were ~~empty~~ on sandy beach.

March 25 Coastal Is., Midway Atoll

Several nesting in a restricted entry area. The nests were not checked for content.

March 26-30 Green Is., Line Atoll

22 birds ~~seen~~ observed in antenna field - many of these nesting. Birds were difficult to work in the full moonlight. The 3rd one handled hit through the glove + lacerated a finger stopping all handling for the night (26 March)

(27 March) Checked nests + measured eggs in South Antenna field

March 28 Worked all the birds in the North Antenna field. None that were observed escaped - the birds seemed reluctant to fly for some reason. Captured + marked 78 returns. During the day the nests were surveyed in this area and in the south antenna field and found ~~63~~³³ nests in both areas as follows:

South Antenna field:

AM 2 eggs - 3

AU - 1 egg 1

AF - 2 eggs 1

AF 1 egg - 1

6 eggs + 1 immature

Hackman, C.D.
1967

Field Notes

Blue-faced Booby (Sula dactylatra)

March 28 Green Is., Kure Atoll

North Antenna Field:

AF with:

2 eggs - 9

1 egg - 5

AM with:

2 eggs - 8

1 egg - 3

1 egg + 1 naked chick - 1

Small naked chick - 1

27 nests

With 33 active nests found this means that at least 12 of the birds captured this evening have not started to breed as yet. There are most certainly at least 7 or 8 more birds around because I did not work the south antenna field this evening.

C.D. Hackman
1967

Species Account

Brown Booby (Sula leucogaster)

March 6 Oahu to Kure

1 bird in Honolulu Harbor Basin before ship left pier.
One bird about 1 hour out of port (about even with Barber's Point Naval Air Station).

March 8 Niihau Island

Nesting along south shore on edge of cliff ⁶⁻⁷ pairs.
Very difficult to check numbers because most birds were well down the slopes. Couldn't determine exactly what the nests contained (Ernie Kosaka)

March 10 Necker Island

Saw 8-10 birds flying around the island. No nests were found. One bird was observed flying with a stick in its mouth to one of the inaccessible ridges above the landing spot. Nests: 4 (2 on NW cape) - 2 eggs each.

March 11, 1967 East Island, French Frigate Shoals

Saw 1 bird flying along west end of island shortly after we arrived. None nesting. None found roosting after dark.

March 13, 1967 Trig Is., French Frigate Shoals

One bird flew over island. None nesting on Trig.

March 14 Whale Shoal, French Frigate Shoals
One bird flew over island. None nesting.

~~March 15, 1967 Whale Shoal, French Frigate Shoals~~
~~One bird flew over island. None nesting.~~

Species Account

Brown Booby (*Sula leucogaster*)

March 18 Laysan Island

None were found along beach on NW quarter of island during a five hour survey after dark.

March 19 Laysan Island

One bird was loafing on a rock shelf on the SW corner of the island. The only one observed during the stay.

March 20 Laysan Island

15 birds were loafing along the north shore and several others were found in the interior. No nests or young were observed.

March 22 Seal Island, Pearl + Hermes Reef

Three birds observed flying from the island. No nests.

March 21-23 Southeast Isd., Pearl + Hermes Reef

Twenty-one nests were found as follows:

Adult male on 2 eggs - 2

Adult male on 1 egg - 1

Adult female on 2 eggs - 11

Adult female on 1 egg - 4

Adult female w/ small naked chick - 1

Empty nests, new construction - 2

21

Several immature birds roosted on the island. One immature bird fished in the small lagoon for several hours in the morning without apparent success. This bird made repeated dives, in series, from altitudes of 2 to 5 feet.

March 24-25 Midway Atoll

None observed.

March 26-30 Green Is., Kure Atoll

One bird on a nest with one egg on a small dirt pile (bulldozed) on the edge of the Scaevola in the interior.

Three birds in flight at the same time. Both male & female were at this nest (26 March).

Hachman, C.D.
1967

Species Account

Brown Booby (*Sula leucogaster*)

March 28 Green Is., Kure Atoll

Found 3 active nests today + may have found another tonight in ~~the~~ near the north antenna field. All three nests found this afternoon contained 2 eggs and all were described + nests + eggs measured. There are at least 20-25 adults and 1 subadult on the island at present.

C.D. Hackman
1967

Species Account

Red-footed Booby (Sula sula)

March 6 Oahu to Kauai

35 seen during crossing, most within 3 hours out of Honolulu Harbor. Most birds were sitting on the water in heavy rain squalls. All adults.

March 7 Around Kilauea Pt. Light.

Saw very few birds from the lighthouse colony while the ship calibrated the Loran Station. Only about 16 birds were observed. No marked birds were seen.

March 8 Nihoa Island

Sprinkled here and there over the island, ^{hundreds on island} ~~scattered~~. Checked 10 nests and found 2 with eggs and 8 with fresh vegetation. Birds are apparently just starting to lay.

March 10 Necker Island

Population about 175 pair. Many birds on nests counting or carrying vegetation. All nests had fresh vegetation. Of 106 nests checked only 3 had eggs - only measured one of these. Birds prepared to nest on Chenopodium + used this species for the nest. There were a few nests scattered around on the old Polynesian ruins but most were found along one slope in lush growths of Chenopodium.

March 11 East Island, French Frigate Shoals

Checked about 2/3rds of the island before the boat came back + we fixed dinner. Found 12 nests only 2 of which had eggs. Rest of nests were of recent construction - some still under construction. Nests were of Tribulus + Chenopodium + some contained fresh Boerhaavia sprigs. One egg was peeped. Nests were on Chenopodium or on old buildings or pieces of wood or metal left here when the original Loran Station was abandoned. After dark there

Hackman, C.D.
1967

Species Account

Red-footed Booby (Sula sula)

March 11 East Is., French Frigate Shoals (cont'd)

were about 80 birds on the island roosting. Six or seven pair were on the nest together. About 8 birds roosted on the telephone poles.

March 12 East Island French Frigate Shoals

Found 5 more nests under construction - no eggs, for an island total of 17 nests w/ ~~only~~ only 2 that had eggs.

March 13 Trig Island, French Frigate Shoals

Twenty-nine nests: 14 with eggs (1 peeped), 1 naked chick and 14 nests under construction (w/ fresh vegetation) 32 birds were observed.

March 14 Wake - Shale, French Frigate Shoals.

Four nests were found on slightly elevated nests on the ground. I was so surprised to find nests on the ground - although this is a fairly common occurrence on some of the equatorial islands it may not occur so often on the Leeward Islands. Two of these nests were new but empty, the other two contained fresh eggs. 22 adults observed.

Fourteen nests were found on the entire island:

| | |
|----------------------------|-----|
| empty but new construction | - 7 |
| 1 egg | - 6 |
| naked chick | - 1 |
| | 14 |

March 17 Offshore Laysan Island.

Occasional birds flying over the ocean on the west side of the island throughout the day.

March 18 Laysan Island

Check of the NW quarter turned up about 25 birds all roosting on Scaevola sp. Six of these were returns (previously banded) and two new birds were banded. Birds were difficult to

Hackman, C.D.
1967

Species Account

Red-footed Booby (*Sula sula*)
March 18 Laysan Island

approach in the moonlight in the thick, crachly ~~Scaevola~~
Scaevola. Several pairs were sleeping on nests but
no eggs or chicks were observed. Total island population
probably around 150 birds at the present time.

March 20 ~~the~~ Laysan Island

About 130 birds present on the entire island most
with nests. Of 35 nests checked only 18 contained eggs.
The other nests all contained fresh vegetation. Nest construction
primarily of Triplaris and small amounts of Boerhaavia and, in one
nest Scaevola. Nests ranged in height from 1 foot to 4 1/2 feet.

March 21-23 Southwest Island, Pearl + Hermes Reef

27 nests: 9 with eggs (1 pipped)

10 with chicks

8 empty, new construction

27

Chicks ranged in size from just hatched to large downy
with no feathers (9 1/2"). Construction was in Scaevola or on the
ground in Solanum. (See measurements + description section).
Roosting population about 65 birds.

March 25 Eastern Is., Midway Atoll

Hackman, C.D.
1967

Species Account

Red-footed Booby (*Sula sula*)

26-30 March Green Is., Kure Atoll

An afternoon count (3:30 p.m.) turned up 79 birds in
the central roost area. An evening count in the
turned up 82 birds in ~~that~~ ^{the} area. (March 26) ^{near the radar reflector.}

March 28 - an early afternoon count of the central
roost area (2:00 pm) found 64 birds sitting in Scaevola.
Started to check breeding status this afternoon but had
to stop when male frigates destroyed a nest everytime
I chased an adult away. Saw 1 nest with an egg
completely demolished within a matter of minutes.

March 29 - all attempts to work this species failed.
The species is just beginning its nesting cycle and birds
are not yet to the point where they'll sit tight as one
approaches (literally crashes) through the Scaevola.

Birds were flying at an approach of 15-100 feet. None
were captured. No banded birds were observed during
this visit during several nights of roost inspections.

Hackman, C.D.
1967

Species Account

Great Frigate (Fregata minor)

March 17 Offshore Laysan Island

Binocular count at dawn - several thousand birds in the air. Majority of birds seen from the ship were immatures + females. Some observed feeding on garbage from the ship but only after it had floated several hundred yards from the ship. None came close to the ship. One adult female observed chasing a Red-footed Booby but results of chase could not be determined because of distance + heavy smells.

March 18 Laysan Island

No complete survey was attempted because of other activities. Numerous males displaying. A large number of birds on nests along west side of island all on Scaevola. Plan to survey there tomorrow. No banded birds were found during a check of the NW quarter of the island.

March 19 Laysan Island

Had to pull off island before a complete survey could be run. Birds are presently on eggs and empty nests. The majority of eggs are presumably fresh although ^{only a few} were checked. Population on island is close to 2000 birds.

March 20 Laysan Island

About 300 flying immatures near the ^{south} end of the island and a few in the interior perched on ~~Scaevola~~. A large number of males were displaying on empty nests of new construction. Of 60 nests checked only 20 contained an egg. Of 18 nests where the sex of the incubating bird could be determined 12 were males. Sixteen of 18 eggs that were coddled were fresh. Nest construction was of Tubulus and all nests were located in Scaevola.

Total nests about 200-250 on the entire island on the basis of an incomplete survey. Nests ranged in height from 1 foot to 3 feet.

C.D. Hackman
1967

Species Account

Great Frigatebird (Fregata minor)

March 8 Mihoa Island

Scattered all over island in little clusters, probably 7-8,000 birds. Checked 21 nests ^{11 eggs} and found ~~21~~ of the eggs to be clean, pinkish when coddled (against sun) and the rest were dirty and opaque (well incubated?). A large number of immatures, 2-3,000 are present, many still on nests. No small young observed.

Of 31 birds sitting on nests:

11 males on eggs
10 females on eggs
4 males on empty nests
6 females on empty nests.

March 10 Necker Island

About 200 nests scattered around the island. Birds were found in little clusters on Chenopodium around the edges of the ridges. A number of nests were found on the same slope as the bulk of the Red-footed Boobies in the Chenopodium. This plant species was used for the nest. The majority of nests were new construction but empty. Only 37 of 100 had egg.

March 11 East Island, French Frigate Shoals

No nests. About 45 birds, mostly females + immatures, were sitting on the east end of the island during the afternoon. About the same number roosted on the island.

March 13 Trig Island, French Frigate Shoals
1 flew over island - on immature.

March 14 Whale-Shale, French Frigate Shoals

Forty-six immatures were sitting in the nesting colony - many on old looking nests.

166 new nests were found as follows 166:

| male on nest: | female on nest: | unk sex on nest: |
|---------------|-----------------|------------------|
| empty - 17 | empty - 4 | empty (new) - 38 |
| 1 egg - 63 | 1 egg - 31 | 1 egg - 13 |

All eggs that were checked (24) were fresh.

C. D. Hashman
1967

Egg Measurements

March 8 Nihoa Island

Red-footed Booby (Sula sula)

37.5 x 65.1 mm.

42.35 x 60.9 mm.

Checked 40 nests and found only two with eggs.
The other ~~38~~ ³⁸ nests contained fresh vegetation
on a base of Sida twigs + other vegetation. Birds
were apparently just starting to breed.

March 10 Necker Island.

40.2 x 65 mm.

Only 3 eggs were observed by total field party. Only found
one of these.

C. D. Hashman
1967

Egg measurements

March 8 Nihoa Island

Great Frigatebird (Fregata minor)

Egg measurements are in millimeters.

| | |
|---------------|-------------------------|
| 47.15 x 67.7 | Fresh - male on nest |
| 46.5 x 69.75 | egg opaque - female " " |
| 47.7 x 70.9 | egg fresh - male " " |
| 50.1 x 72.6 | " " - male " " |
| 50.4 x 69.5 | egg opaque - female " " |
| 45.65 x 68.65 | egg fresh - male " " |
| 47.3 x 72.3 | " " - female " " |
| 47.45 x 73.85 | " " - female " " |
| 47.5 x 70.5 | egg opaque - female " " |
| 47.75 x 64.4 | " " - female " " |
| 47.0 x 73.1 | " " - female " " |
| 46.4 x 76.95 | " " - female " " |
| 47.2 x 70.75 | " " - male " " |
| 48.2 x 70.9 | " " - male " " |
| 48.4 x 69.95 | " " - male " " |
| 48.35 x 73.9 | egg fresh - male " " |
| 49.2 x 67.9 | egg opaque - male " " |
| 47.3 x 64 | " " - male " " |
| 47 x 71.2 | " " - female " " |
| 48.7 x 68.6 | egg fresh - male " " |
| 47 x 71.5 | " " - female " " |


Checked 38 nests:

11 males on eggs

10 females on eggs

4 males on empty nests

6 females on empty nests

Eggs ranged in shape
from 

to 

Fresh eggs showed pinkish when held up to the sun. These
eggs were clean. Opaque eggs were quite dirty + several
were bloody.

Nests were scattered here + there mostly on low platform
constructed loosely of Solanum + Sida stems.

Hackman, C.D.
1967

Species Account

Great Frigatebird (*Fregata minor*)

21-23 March Southeast Is., Pearl + Hermes Reef

Saw one adult female with an orange streamer attached to the left leg. Bird was sitting with a group of nesting + courting frigates but I could not determine if it had a nest. The bird failed to return during a 35 minute wait near the nesting area.

48 nests as follows:

Adult female on egg - 10
Adult female on empty nest - 6
Adult male on egg - 16
Adult male on empty nest - 14
Empty, new construction - 2
48

The eggs were all "candied" (against direct sunlight) and all but two were opaque and dirty.

There was a great deal of courting during this visit.

March 25 Eastern Is., Midway Atoll.

Hackman, C.D.
1967

Species Account

Great Frigate (*Fregata minor*)

26-30 March French Is., Line Atoll

Afternoon count of birds in northern portion of the island at 3:20 pm - 134 on ~~Scaevola~~ *Scaevola* and 38 flying. A considerable amount of courting, twig carrying, pouch inflation and some nest robbing (for stubs) was observed. (26 March).

March 28 An afternoon count of the central roost area turned up 114 frigates (29 in flight). Spent about 40 minutes watching for this species destroy nests after I had chased birds off in order to check breeding status. I noticed that the birds did not bother a nest if it contained an egg but would immediately dismantle one if it was empty. Several female frigates refused to move from their nests even though they were empty and in spite of my showing them around + lifting them up in the air.

The majority of the birds involved (14 of 18) in this nest destruction were subadult males. These subadults would move in rapidly as soon as a bird left an empty nest and one after another would fly over and grab a heap full of the nest. Several adult males also made passes + took some vegetation but not in the same manner as the subadults. The subadults appeared to be doing this for chicks. After making a strike + picking up some vegetation the bird would fly a few feet, drop the vegetation, wheel around and get in line for another pass at the nest. The adults involved in this pilfering appeared to be using the material ~~for~~ for courting or nest construction since all flew away with the vegetation. Several of these adults were observed landing at distant nests that appeared to be occupied by females.

In view of the damage that would be caused by running through the entire colony chasing all birds off their nests I stopped taking measurements + surveying nests.

Before the mass marauding started I checked 12 nests with the following results:

AM

1 egg - 3
empty (new) - 2

AF

1 egg - 2
empty (new construction) - 6

Hackman, C.D.
1967

Species Account

Great Frigatebird (*Fregata minor*)

March 28 Green Is., Kure Atoll

Five eggs were measured before + during the nest destruction that discouraged ~~the~~ further measurements. Of these five eggs four appeared to be fresh by candling them against direct sunlight and one was dirty and opaque.

March 29 Green Is., Kure Atoll

Did not capture any birds of this species at night. Several abortive attempts were made + the endeavor was abandoned as too futile + time consuming.

C.D. Hackman
1967

Species Account

Sooty Tern (*Sterna fuscata*)

~~Abundant~~
March 7 off Kauai + Ni'ihau Islands.

29 birds observed in feeding flock as ship passed ~~off~~ with Ni'ihau Island. Numerous solitary birds + several small groups of 2-4 birds were also seen in this area.

March 8 Nihoa Island

Abundant over entire island nesting solitary or in dense clusters under heavy vegetation (*Chenopodium* + *sida*). Most nests on bare ground but some were found on slightly indented pile of dead vegetation. ~~Estimated~~ ~~about~~ We were unable to check the entire island due to lack of time + energy and the emphasis on the capture of 50 pair of Nihoa Finch. Population: many thousands, probably somewhere around 25,000 but this is pure guesswork.

March 10 Necker Island

Approximately ~~20,000~~ ^{30,000} scattered over several slopes and ~~ridges~~ ridges. Birds were in all stages of breeding from barely incubated eggs to flying young. In one area a few fresh chicks were seen. Birds nested in bare areas on the slopes, on little ledges along the cliff sides and under dense growths of *Chenopodium*. About 25% w/ chicks.

March 11 East Island, French Frigate Shoals

Approximately 20,000 birds on the island just initiating their breeding cycle. Only a few eggs were found today on the west end of the colony. Birds are mostly in *Trichurus* but a few are on open ground along the beach crest.

March 12 ~~East Island, French Frigate Shoals~~
After dark night we went out from the mouth of Butler

Hackman, C.D.
1967

Species Account

Sooty Tern

March 12 East Is., French Frigate Shoals

After last night's driving rain and 40 mph winds (estimated) the Sooty population has been cut to a fourth of its former size. Only the birds on eggs remained on the island (about 5,000).

March 13 Trig Is., French Frigate Shoals

Fifty birds were on the ground on the ^{west} end of the island in Lepturus. These birds were reluctant to fly even when closely approached. They were probably ready to lay.

March 14 White - Skate, French Frigate Shoals

About 150 birds on the north end of the island. No eggs were found. Birds were reluctant to fly when approached.

March 14 Trig Island, French Frigate Shoals

Fifteen fresh eggs were found among the 50 or so birds that were observed yesterday on the north end of this island.

March 17 Offshore Laysan Island

Small groups of 3-6 birds flying, passed ship throughout the day. No concentration observable from the ship during a complete circuit of the island in the morning.

March 18 Laysan Island

A swirl of about 4,000 birds was over the South end of the island at dusk (+ in the late afternoon.) During a check of the NW quarter of the island a small group of about 200 was found on the ground in a bare, sandy area between dense sections of Scaevola. Three banded birds were captured out of this group all 903 series. No eggs were found.

Hackman, C.D.
1967

Species Account

Sooty Tern (*Sterna fuscata*)

March 20 Laysan Island

About 5,000-8,000 birds swirling over the island. No nests were found during this short, daylight visit.

March 21-23 Southwest Is., Pearl + Hermes Reef

Between 2,000 (daylight) and 5,000 (night) birds swirling over the island. No eggs were found.

Birds were on the ground during the second night on the island but no eggs were found on the morning of the 23rd. The birds were coming down in bare areas between mustardweed, Sicyos and Solanum.

March 25 Eastern Is., Midway Atoll

March 26-30 Green Is., Kure Atoll

About 75 birds around the island during the day. In the evening about 500 birds swirling and chattering off the eastern end of the reef. None down at night (26 March).

March 28 Only a few seen today. Strong, gusty wind appeared to have scattered the small swirling flock that was observed on the two previous nights as they weren't heard or observed this evening.

C.D. Hackman
1967

Species Account

Gray-backed Tern (Sterna lunata)

March 8 Niihoa Island

Several Eggs, no chicks found. ~~The~~ The species appeared to be very common and distributed all over the island. Gene Kniddle commented that they commonly nested in the gullies to the west of our campsite but I didn't get over there to check. Population is at least 1,000 and ~~possibly 1,500~~.

March 10 Necker Island

Difficult to assess population because the birds were nesting down the cliff walls around the island. No chicks were found. Only about 10 eggs were found. Two of these ~~were~~ were collected and were only slightly incubated. Population - at least 2000 birds ~~approximately 2000~~.

March 11 East Island, French Frigate Shoals

Four birds were observed during the afternoon during a circuit of the island. None observed or heard at night.

March 13 Trig Is., French Frigate Shoals

15 birds scattered around island. No nests found.

March 14 White - Shute French Frigate Shoals

75-100 birds scattered over the island in little groups of 2-10 birds. Most birds behaved as if they had eggs but only 1 egg was found.

Hackman
1967

Species Account

Gray-backed Tern (Sterna lunata)

March 17 Offshore Laysan Island

Occasional birds seen or heard calling from the ship throughout the day.

March 18 Laysan Island

Numerous small groups of from 5 to 50 along the north + west shores in the NW quarter of the island. These small groups were normally in or around Scaevola and clumps of grass. No banded birds were observed among the approximately 400 birds observed after dark.

March 19 Laysan Island

Found a small colony with eggs ~~in~~ around a series of rock shelves on the southwest beach while making the circuit of the island on a seal census. Saw 15 eggs but had no time to check them. Had to pull off the island before measurements could be made. Total island population exceeds 1000 birds.

March 20 Laysan Island

Small groups of nesting birds scattered here and there under Scaevola. Three groups of birds yielded a total of 26 eggs. Total island population appears to be around 200 birds at the present time. One egg that was broken had been barely incubated. Nests were on bare ground in slight depressions made in the sandy soil. Several hundred on south end of island.

March 21-23 Southeast Is., Pearl + Hermes Reef

About 75 birds on the island in several locations - on the ground during the day. No eggs were found as the result of several careful searches. Birds are counting.

March 22 Seal Is., Pearl + Hermes Reef

25 birds on a rocky area on the north end of the island. No nests or eggs were found.

Hackman, C.D.
1967

Species Account

Gray-backed Tern (Sterna lunata)

March 25 Eastern Is., Midway Atoll

March 26-30 Green Is., Kure Atoll

19 birds calling in flight along northeastern beach
at 1:30 p.m. No nests found around beach (26 March)

C.D. Hackman
1967

Species Account

Blue Gray Noddy (Procelsterna caerulea)

March 8 Mihoa Island

Eggs to half grown chicks. Birds were most abundant on the cliffs around the edges of the island where most of the nests were difficult or impossible to check. Have no idea how large population is but the species is abundant. Population at least several thousand.

March 10 Necker Island

Only a few eggs and several small chicks were found because this species nested along the cliff walls in inaccessible areas. Couldn't even begin to survey these in six hours. Population probably exceeds 2-3000 birds. Most chicks downy. 1 chick about, week from fledging.

March 11-14 ~~East Island~~ French Frigate Shoals

Not present

March 18 Laysan Island
None observed.

March 20 Laysan Island
None observed during a short daylight visit.

March 21-23 Pearl + Hermes Reef
None observed.

March 24-25 Midway Atoll
None observed.

March 26-30 Green Is., Kure Atoll
None observed.

C.D. Hackman
1967

Species Account

Noddy Tern (*Anous stolidus*)

March 8 Nihoa Island

1 downy young, 1 egg, most chicks $\frac{1}{2}$ to $\frac{3}{4}$

grown. ~~about~~. Saw about 20 chicks under rocks mostly. Gene ~~Smith~~ ^{Kindell} found a fair number of eggs here and there. Have no ideas regarding total population although it must amount to several thousand birds.

March 10 Necker Island

None were observed.

March 11 East Island, French Frigate Shoals

Found 33 nests on a partial circuit of the island toward dusk. All but 7 had eggs. Birds were on all 33 nests. One egg - accidentally broken - was barely incubated. Roosting population about 300 birds.

March 12 East Island, French Frigate Shoals

Found 15 additional nests for a total of 45 nests on the island.

March 13 Trig Is., French Frigate Shoals

37 nests were found. Total number present: 175 birds.

March 14 Whale Skate, French Frigate Shoals

117 nests with fresh or barely incubated eggs. One egg, broken by a bird as it left the nest, was fresh. One $\frac{3}{4}$ grown chick was observed. About 1,000 adults were sitting on the beaches in four large groups.

March 15 Gardner Pinnacle

Several hundred birds were in flight over the island as we passed by around 800 yds to the north.

Hackman, C.D.
1967

Species Account

Noddy Tern (*Anous stolidus*)

March 17 Offshore Laysan Island

Several birds observed flying from island in the morning. None observed through the remainder of the day.

March 18 Laysan Island

Several hundred roosting on *Scaevola* around the north + west shores during an after dark check of the NW quarter of the island. These birds were quite alert + difficult to approach. Only one bird with a band was observed but this was about 20 feet into dense *Scaevola* where it could not be approached + captured. ~~No count~~. (Total island population close to 1000 birds at the present time.) 1 bird with an egg. No count made.

March 20 Lisianski Island

Only about 75 birds were observed. No nests or young were found during a partial survey of the northern half of the island.

March 21-23 Southeast Is., Pearl + Hermes

9 birds found roosting on the island (night of 21st). No nests were found.

March 22 Grass Is., Pearl + Hermes Reef

1 nest found on beach crest on southern end of island with egg. Only 1 bird was observed.

March 22 Seal Is., Pearl + Hermes Reef

9 on beach.

March 25 Midway Atoll

Hackman, C.D.
1967

Species Account

Noddy Tern (Anous stolidus)

March 26-30 Green Is., Line Atoll
None observed.

C.D. Hackman
1967

Species Account

White-capped Noddy (Anous tenuirostris)

March 8 Nihoa Island

Nests on perpendicular cliffs couldn't check nesting status or obtain any decent population totals in the time available. Several hundred were observed flying around the south side of the island so the total population is probably in the thousands.

March 10 Necker Island

This species ~~was~~ was confined to the steep slopes where it was impossible to check breeding status. No eggs or young were observed along the higher ridges and slopes. Population probably exceeds 1000 birds. On NW cape some birds on eggs + 1 half grown chick.

March 11 East Island, French Frigate Shoals

None present.

March 13 Trig Is., French Frigate Shoals

None present

March 14 Whale Shale, French Frigate Shoals

About 200 birds sitting on several low Messerschmidia trees. No nests were found.

March 18 Laysan Island

About 350 birds roosting + nesting in Ironwood (Coarctata) near west landing. After dark I checked turned up 10 nests with eggs (8 of which appeared fresh when candled) and 2 of which were cold + opaque. One of the cold eggs was cracked slightly. There were 6 nearly fledged young in the tree. Nests ranged in height from 2 to 15 feet. Depth of nesting materials ranged from 4 to 8 inches and the width of the nest ranged from 6 to 10". (See measurements.)

Hackman, C. D.
1967

Species Account

White-capped Tern (Anous tenuirostris)

March 19 Lagoon Island

Five or six birds were carrying nesting materials into the Ironwood tree near camp. Several had what appeared to be leaves from Isonoea sp.

March 20 Kisicarak Island

Birds found nesting in Ironwood (Casuarina) which they seem to prefer and Scaevola. In all stages from new nest construction to nearly fledged young. About 30 nests with eggs, 5 with small downy young & 10 with nearly fledged young were observed. These northern birds do not employ plants from the reef as much as the ones on the southern islands (Phoenix + Line Is.) do perhaps because such plants aren't as abundant here. Materials used: Scaevola, Eragrostis, Tarbilus, Boerhaavia and several types of seaweed. One nest of recent construction contained five small Portuguese man-o-war. The majority of nests were saddled on branches in forks. One nest was found nearly suspended in the "vee" of several small branches suspended in a manner that is reminiscent of the Red-eyed Vireo (Vireo). Leaves from a morning glory were also used in construction of their nests. Total population around 350 adults to 500 adults.

March 21-23 Southeast Is., Pearl + Hermes Reef

5 birds roosting on island (night of 21st). Occasional birds observed during the day. No nests.

March 21-23 Pearl + Hermes Reef

None on island other than Southeast, P+H Reef

March 24-25 Sand Is., Midway Atoll

Hackman, C. D.
1967

Species Account

White-capped Noddy (Anous tenuirostris)

March 26-30 Green Is., Kure Atoll

15 Observed over the lagoon (south side) during the morning hours (March 28). The CG personnel say that a large number roost on one end of the runway (east) every night but several trips ~~past that~~ passed that area have not ~~found them~~ located them.

C.D. Hackman
1967

Species Account

White Tern (*Gygis alba*)
March 8 Nihoa Island

Nests down on cliffs couldn't check breeding status. Not enough observations for population estimate. Population probably several hundred to a thousand.

March 10 Necker Island

A few birds with eggs were observed along the higher ridges and cliffs. Most birds were located along the steep cliff areas where the nests couldn't be easily checked.

Population appears to be around ~~500~~ ¹⁰⁰⁰ birds. Here found some small downy young on NW cape.

March 11 Tern Island, French Frigate Shoals

About 15 birds around Coast Guard mess. Entire island was not surveyed.

March 11 East Island, French Frigate Shoals.

None present.

March 13 Trig Is., French Frigate Shoals
None present

March 14 ~~Red~~ Whale-Skate, Fr. Fr. Shoals
None present.

March 17 Offshore Laysan Island

Two birds observed flying west from island in the early morning but none for remainder of the day.

March 18 Laysan Island

Only about 8 birds were observed during an after dark check of the NW quarter of the island. One bird had a $\frac{3}{4}$ grown nestling that was on a rock near the west shore on the edge of a dense growth of *Scaevola*. All birds observed after dark except one on a

Hackman, C.D.
1967

Species Account

White Tern (*Gygis alba*)

March 18 Laysan Island
rocks) were ~~seen~~ looting on *Scaevola* sp.

March 19 Laysan Island

About 100 birds were observed on a complete circuit of the island. One bird on an egg and 3 birds with $\frac{1}{2}$ grown young were found.

March 20 Lisianski Island ^{tid on seal count.}

About 40 birds on the entire island. Only 1 egg, 11 inches on a dead branch of an Ironwood (*Casuarina*) about ~~10~~ ¹¹ inches above the ground. One adult observed feeding a white nestling.

March 21-23 Southeast Is., Pearl + Hermes Reef

Several birds were observed around the island during the visit. No nests were found.

March 22 ~~P~~ ^S ~~Shoal~~ ^{Island}, Pearl + Hermes Reef

Two birds sitting on an exposed shelf on the edge of the reef. No nests were observed.

March 24-25 Sand Is., Midway ~~Island~~ Atoll

Hackman, C.P.
1967

Species Account

White Tern (Sygis alba)

March 26-30 Kress Is., Kure Atoll

Two birds seen during an island circuit on 26-27
March. No nests found.

Hackman
1967

Melanesians

Blue-faced Booby (Sula dactylatra)

Nests were along ridges in bare areas. In one area nests were only 4 feet apart but in most areas the birds were 15 to 20 feet apart.

measurements are in millimeters.

| | | |
|----|---------|-----------------------------|
| AF | 2 eggs: | 45.1 x 66.6 ; 44.1 x 60.8 |
| AM | 1 egg: | 44.2 x 65.1 |
| AM | 2 eggs: | 44.95 x 66.25 ; 44.1 x 63.1 |
| AM | 2 eggs: | 44.7 x 62.2 ; 43.2 x 63.1 |
| AF | 2 eggs: | 47.1 x 70 ; 46.4 x 66.65 |
| AF | 2 eggs: | 45.7 x 64.3 ; 44.8 x 68.1 |
| AF | 1 egg: | 46.8 x 64.5 |
| AF | 2 eggs: | 46.5 x 70.8 ; 44.5 x 66 |
| — | 2 eggs: | 45.7 x 67.7 ; 44.7 x 64.8 |
| AM | 2 eggs: | 47.6 x 68.8 ; 44.4 x 69.2 |
| — | 1 egg: | 45.7 x 63.3 |

C.D. Hackman
1967

Measurements

Nihoa Island, March 8

Sooty Tern (*Sterna fuscata*)

Many eggs on bare ground under *Sida* and *Solanum*.
Found a few eggs (5) on a slightly depressed pile of
dried vegetation - small twigs + pieces of bark.

Egg measurements are in millimeters

36.35 x 48.3

37.5 x 49.75 light incubation

36.95 x 53.6

37.1 x 51.7

35.9 x 50.95

35.45 x 46.85

34.8 x 51.9

35.95 x 52.32

35.9 x 51.8

37.25 x 51.15

37.5 x 49.84

35.6 x 52.7

36.9 x 48.15

37.3 x 51.9

36.84 x 52.41

36.15 x 50.7

36.65 x 51.16

34.78 x 50.75

37 x 52.5

36.75 x 50.75

36.5 x 51.15

Eggs range in coloration from pure white with few
spots to dark tan with heavy brown spotting. Several
eggs that were inadvertently broken were lightly incubated.

Hackman, C.D.
1967

Measurements

Great Frigatebird (*Fregata minor*)

March 10

Necker Island

Egg measurements are in millimeters.

| Egg measurement | Stage of incubation | Sex incubating |
|-----------------|---------------------|----------------|
| 49.25 x 72.6 | fresh | ? |
| 50 x 64.5 | " | female |
| 50.8 x 68.2 | ? | male |
| 48.65 x 68.7 | fresh | male |
| 48.2 x 66.8 | opaque | female |
| 47.8 x 72.2 | fresh | male |
| 48.9 x 66.9 | opaque | female |
| 46.2 x 68.4 | opaque | male |
| 44.7 x 65.25 | ? | female |
| 49 x 71.5 | opaque | male |
| 48.5 x 69.1 | opaque | male |
| 47.4 x 71.4 | opaque | male |
| 47.6 x 70.1 | opaque | male |
| 46.4 x 72.6 | fresh | male |
| 47.5 x 69.5 | fresh | female |
| 49.3 x 71.2 | fresh | female |
| 48.6 x 71.1 | opaque | female |
| 45.6 x 71.8 | " | ? |
| 48.1 x 69.6 | " | female |
| 48.2 x 68.2 | " | female |

Nest description: nests on *Chenopodium* base + constructed almost
exclusively of *Chenopodium* twigs.

| Height above ground | Diameter |
|---------------------|-----------|
| 8 inches | 15 inches |
| 10 " | 14 " |
| 19 " | 13 " |
| 14 " | 17 " |
| 18 " | 18 " |
| 12 " | 16 " |
| 11 " | 15 " |
| 9 " | 16 " |
| 13 " | 16 " |
| 14 " | 12 " |

Hackman, C.D.
1967

Measurements

Sooty Tern (Sterna fuscata)

March 10 Necker Island

All egg measurements are in millimeters.

| | | |
|-------|--------------|--------------|
| Eggs: | 35.5 x 53.4 | 34.8 x 52.4 |
| | 34.4 x 54.4 | 35.1 x 50.2 |
| | 35.2 x 54.4 | 35.0 x 49.6 |
| | 36.2 x 49.7 | 36.6 x 48.7 |
| | 36.5 x 51.6 | 36.65 x 51.5 |
| | 35.9 x 48.5 | 35.4 x 51.8 |
| | 37.7 x 52.8 | 37.7 x 49.7 |
| | 35.5 x 45.1 | 35 x 50.5 |
| | 36.1 x 48.65 | 35.1 x 51.5 |
| | 34.5 x 52.5 | 36.5 x 57.3 |

Hackman, C.D.
1967

Measurements

Gray-backed Tern (Sterna lunata)

March 10 Necker Island

measurements are in millimeters.

| |
|--------------|
| 34.2 x 47.65 |
| 34.7 x 45.8 |
| 32.1 x 46.5 |
| 33.5 x 43.7 |
| 32.4 x 48.2 |
| 33.1 x 46.25 |
| 34.1 x 47.8 |
| 35.5 x 45.2 |
| 33.7 x 46.4 |
| 33.8 x 46.25 |

Hackman, C. D.
1967

Measurements

Fairy Tern (Gygis alba)

March 10

Necker Island

30.9 x 42.2 mm. on rock ledge.

Hackman, C. D.
1967

Measurements + Nest Descriptions

Red-footed Booby (Sula sula)

March 11 East Island, Fr. Fr. Shoals

1. Nest in Chenopodium, empty, bird sitting, no fresh vegetation, 18" above ground, 13" diameter. Constructed of Tribulus + Chenopodium.
2. In Chenopodium, 13" above ground, 12" diameter, slight depression, Tribulus + Chenopodium used in construction. Egg pipped, chick just starting out. 41.15 x 62.4 mm.
3. Nest in Tribulus + constructed exclusively of Tribulus. Nest on ground, depth 7", 15" diameter, no egg, fresh vegetation on nest.
4. Nest in Chenopodium, constructed of Chenopodium + Tribulus, nest on ground 8" depth, 12" diameter.
5. In Tribulus, supported by two rusted steel girders. Nest 9" deep, 12" diameter, 2" depression.
6. Nest supported by a thin sheet of corrugated roofing turned on edge, constructed of Tribulus. Fresh Boerhaavia in nest w/ some fresh Tribulus. 17" high, 13" diameter. 1 egg, bluish in color: 42 x 58.5 mm.
7. Nest on several boards leaning against an old abandoned lifeboat, construction of Tribulus. Fresh Boerhaavia twigs on nest. New nest - all materials recent. 14" high, 15" diameter.
8. Five nests constructed of Tribulus in Messerschmidia. 2 under construction, 3 appear finished. None over 18" high, all between 12"-14" diameter. All materials in these nests recent.

Hackman, C.D.
1967

Measurements + Nest Description

Common Noddy Tern (Anous stolidus)

March 11 East Is., French Frigate Shoals
(all egg measurements in millimeters)

38.3 x 52.75 on ground, on tribulus mat, slight depression, 7" wide

38.65 x 56.1 nest 2" high x 10" wide on mat of Tribulus in
Tribulus + Portulaca

36.8 x 53.7 nest on thin mat of Tribulus on old boards, several
thin pieces of coral rubble, sea shells. frigatebird feather.
nest 8" wide

36.6 x 53.85 nest 3" high x 10" wide of Tribulus, on ground, shells

38.2 x 56.9 nest 6" high x 11" wide of Tribulus twigs

36.95 x 51.5 nest $\frac{1}{2}$ " of Tribulus twigs on board.

37.45 x 52.8 under several leaning boards on thin mat of Tribulus
about 7" wide

36.2 x 51.8 on bare ground on coral rubble, clear spot 4" x 5"
nest surrounded by Tribulus, Boerhaavia + Portulaca

37.65 x 51.5 Thin Tribulus mat ($\frac{1}{4}$ ") on sheet metal
nest 11" wide.

35.3 x 51.5 Thick Tribulus mat (6" deep) x 11" wide in
patch of Tribulus

38.15 x 56.95 $\frac{1}{2}$ " mat of Tribulus on corrugated metal, 11" wide

35.9 x 53.9 on bare ground on coral rubble, slight depression, 6" wide

37.75 x 55.1 on thin mat of Tribulus + coral rubble, nest 5 $\frac{1}{2}$ " wide
egg broken accidentally by dropped tape - barely incubated.

Hackman, C.D.
1967

Measurements + Nest Description

Common Noddy Tern (Anous stolidus)

March 11 East Is., French Frigate Shoals
(Egg measurements are in millimeters)

38.4 x 56.9 Thin Tribulus mat in Tribulus, no
depression, also in nest: frigate feather + shells.

37.5 x 52.2 same as above

36.8 x 52.15 same as above, egg laying beside a piece
of broken bottle.

All eggs following were on thin Tribulus mats in a
patch of Tribulus:

36.65 x 50.2 Average nest diameters - 6-8"
37.5 x 52.2 slight depressions in all.

37.2 x 56.6

36.8 x 50.6

37.4 x 52.9

37.5 x 52.6

37.15 x 54.6

Distance between egg centers on
4 nests: 17", 17", 25", 27"

7 empty nests were found in same area as above 7
nests. Birds were sitting on all nests.

37.9 x 50.7

36.65 x 53.85

37.35 x 53.0

Hachman, C.D.
1967

Measurements + Nest Descriptions

Sooty Tern (Sterna fuscata)

March 12 East Island, French Frigate Shoals

Eggs on bare ground, most in slight depressions.
Vegetation, all low: Digitaria, Tribulus + Boerhaavia.
(Measurements are in millimeters)

36.5 x 51.70
35.2 x 50.20
36.0 x 51.50
37.0 x 51.80
34.8 x 50.70
37.25 x 50.60
36.6 x 51.20
35.5 x 51.35
34.6 x 46.55
36.4 x 49.80
36.6 x 52.8
34.3 x 54.50
34.6 x 47.20
36.45 x 48.15
37.0 x 54.10
36.0 x 51.65
37.35 x 56.00
36.3 x 50.15
37.1 x 53.6
36.2 x 52.85

Hachman, C.D.
1967

Egg Measurements
(all measurements in millimeters)

Blue-faced Booby (Sula dactylatra)

14 March Whale - Skate, FF Sh.

All nests either on beach about 10 feet in from high water line or on sandy areas in the interior. No nests had any vegetation in them. All were on completely bare sand.

Not measured:

AF 2 eggs: 48.15 x 67.1
48.6 x 70.5

AM - 2 eggs - III

AM 1 egg + 1 naked chick

AF - 2 eggs - I

AF 1 egg 48 x 76

AF 2 eggs 48 x 71.5
47.9 x 73.6

AF 2 eggs 46.15 x 69.4
44.5 x 65.5

AF 1 egg 47.4 x 72.2

AF 2 eggs 49.35 x 67.15
47.2 x 65.7

AF 1 egg 47.8 x 67.5

AM 1 egg 44.2 x 63.4

AF 1 egg 47.9 x 69.6

AF 1 egg 47.8 x 70.3

AM 1 egg 47.15 x 67.15

AF 2 eggs 49.1 x 70.5
48.4 x 70.4

AM 2 eggs 44.3 x 60.2
46 x 64.9

AF 2 eggs 46.5 x 60.25
48 x 62.45

AM 2 eggs 44.65 x 62.8
44.5 x 61.7

AM 1 egg 45.75 x 63.25

Hackman, C.D.
1967

Egg Measurements

Blue-faced Booby (Sula dactylatra)

March 20

Lisianski Island

All nests on beach crest on bare sand. All with slight depression.

All measurements in millimeters:

Sex incubating

Measurements

male

46.65 x 68.3 ; 46.5 x 74.6

male

47.65 x 72.3 ; 47.25 x 67.95

female

46.2 x 63.35 ; 45.3 x 63.95

female

47.4 x 65.8

male

43.7 x 63.2 ; 45.5 x 63.1

male

46.1 x 65.75 ; 46.85 x 65.7

female

47.4 x 69.65 ; 46.1 x 71.8

unknown

43.95 x 64.35

female

48.45 x 72.9 ; 48.85 x 65.85

male

45.6 x 66.1 ; 46.5 x 66.2

female

47 x 66.7 ; 45.75 x 61.8

male

45.7 x 65.4 ; 44.7 x 47 x 62.55 (odd shape)

female

46.6 x 66.5 ; 47 x 65.5

One bird broke a two egg clutch as it rapidly departed.
Both had fairly well developed chicks but one was about twice the size of the other.

Egg Measurements + Nest Descriptions

Red-footed Booby (Sula sula)

March 20

Lisianski Island

All nests were in Scaevola from 1 foot to 4½ feet in height. Construction was primarily of Tribulus with small amounts of Scaevola + Boerhaavia.

Checked out 85 nests, all new construction all with sprigs of fresh vegetation. Only 18 had eggs.

All measurements in millimeters:

39.2 x 60.0

40.4 x 61.5

42.2 x 63.1

42 x 58.3

40.8 x 67.7

42.5 x 64.9

41.55 x 63

42.25 x 61.8

39.5 x 56.5

41.55 x 62.45

41.75 x 63.8

38.2 x 63.3

41.1 x 65.6

39.55 x 62.65

41.8 x 66.5

40.3 x 64.6

41.8 x 64.25

39.7 x 62.7


Hackman, C.D.
1967

Egg measurements + Nest Description

Great Frigatebird (*Fregata minor*)

March 20 Lisianski Island

All nests in *Scaevola*, 15" to 34" high. Nest diameters 12" - 18". Construction almost exclusively of *Tribulus* with occasional pieces of *Portulaca* + *Boerhaavia*.

| Egg measurement | Sex incubating | Condition of egg |
|------------------|----------------|--|
| 46.35 x 68.2 mm | male | fresh |
| 46 x 82.1 mm | male | opaque, shape:  |
| 49 x 73.4 mm | female | fresh |
| 49.95 x 70.55 mm | male | opaque |
| 45.9 x 68.3 mm | female | fresh |
| 50.8 x 70.6 mm | male | — |
| 46.5 x 73.8 mm | female | — |
| 47.6 x 67.7 mm | female | fresh |
| 47.5 x 69.55 mm | male | fresh |
| 47.35 x 70.25 mm | male | opaque |
| 46.5 x 70.1 mm | male | fresh |
| 45.3 x 70.4 mm | male | fresh |
| 45.1 x 68 mm | male | fresh |
| 47.6 x 73.85 mm | male | opaque |
| 47.85 x 68.5 mm | male | fresh |
| 47.4 x 67.5 mm | female | fresh |
| 50.5 x 73.6 mm | female | opaque |
| 49.55 x 69.3 mm | male | fresh |
| 47.35 x 69.2 mm | unknown | fresh |
| 47.65 x 69.0 mm | unknown | opaque |

Eggs were candled against the unobscured sun. Fresh eggs appeared pinkish in this light.

Hackman, C.D.
1967

Egg measurements.

Gray-backed Tern (*Sterna lunata*)
March 20 Lisianski Island

All nests under *Scaevola* and morning glory on sandy soil
all measurements in millimeters:

| | |
|---------------|---|
| 33.5 x 46.4 | all eggs were in slight depressions in sandy soil. |
| 31.5 x 43.9 | |
| 32.5 x 44.7 | |
| 32.8 x 46.2 | |
| 33.1 x 48.7 | |
| 33.65 x 47.35 | |
| 32.9 x 43.15 | |
| 33.5 x 46.2 | |
| 33.75 x 48.65 | |
| 32.9 x 42.55 | egg broken - barely incubated |
| 32.15 x 45.35 | |
| 33.8 x 45.45 | |
| 32.15 x 46.15 | |
| 33.4 x 43.15 | |
| 33.6 x 47.35 | |
| 34.1 x 47.55 | |
| 32.95 x 46.2 | |
| 33.0 x 46.9 | |
| 31.25 x 43.4 | |
| 32.7 x 45.65 | |

Hackman, C.D.
1967

Measurements + Nest Description

Hawaiian Noddy Tern (Anous tenuirostris)

March 20

Lisianski Island

Nest in Ironwood (Casuarina)

| Egg dimensions | Height | Width | Depth | Nest Materials + Comments |
|----------------|---------|---------|--------|--|
| 32.8 x 45.8 | 55" | 8" | 5" | <u>Scaevola</u> leaves, grass, <u>Portulaca</u> , <u>Portuguese man-of-war</u> , some seaweed. |
| 30.7 x 46.5 | 54" | 7 x 10" | 5 1/2" | <u>Tribulus</u> , <u>Scaevola</u> , grass |
| 38.2 x 44.6 | 10' | 5" | 2 1/2" | " " " on this branch |
| 31.6 x 45.3 | 7' | 7" | 6" | Egg cold + dirty, prob. abandoned. |
| 30.3 x 43 | 5' | 7 1/2" | 5" | <u>Grass</u> , morning glory |
| 30.55 x 48.3 | 4' | 5 1/2" | 4" | Egg cracked + dirty, prob. abandoned. |
| 30.5 x 42.9 | 53 1/2" | 6 1/2" | 4" | Same material as 2nd nest, also used <u>Boerhaavia</u> . |
| 32.8 x 46.9 | 34 1/2" | 6 x 8" | 5" | |
| 31.8 x 42.8 | 37" | 6" | 4" | |
| 32.3 x 44.5 | 38" | 9 x 13" | 3 1/2" | <u>Grass</u> , morning glory + <u>Casuarina</u> . |
| 32.5 x 45.4 | 38" | 6" | 4" | Egg dirty, prob. abandoned. |
| 31.9 x 43.3 | 21" | 6" | 4 1/2" | Same as 2nd nest. |

Nests in Scaevola

30.8 x 46.95
31.5 x 44.5
31.9 x 46.15
32.85 x 47.15
31.6 x 44.3

egg pipped

All nests in Scaevola of grass + morning glory construction, ranged in height from 18" - 32".

All egg measurements are in millimeters.

Hackman, C.D.
1967

Egg Measurements

White Tern (Gygis alba)

March 20

Lisianski Island


31.5 x 42.3 mm. about 11 inches above ground on ironwood branch (Casuarina)

Hackman, C.D.
1967

Egg Measurements

Blue-faced Booby (Sula dactylatra)

March 22 Southeast Is., Pearl + Hermes Reef
(all measurements in millimeters)

| | | |
|----|--------|--|
| AM | 2 eggs | 50.50 x 65.50 ; 48.95 x 64.30 |
| AF | 2 eggs | 47.90 x 69.75 ; 49.25 x 70.15 |
| AM | 2 eggs | 48.50 x 67.75 ; 45.55 x 74.20 shaped  |
| AM | 2 eggs | 46.50 x 71.70 ; 49.55 x 73.70 |
| AM | 1 egg | 43.95 x 70.05 |
| AM | 2 eggs | 49.30 x 66.50 ; 46.70 x 70.95 |
| AF | 2 eggs | 48.35 x 67.70 ; 48.25 x 67.45 |
| AF | 2 eggs | 48.60 x 67.60 ; 46.85 x 66.55 |
| AF | 2 eggs | 46.30 x 63.85 ; 46.15 x 66.95 |
| AF | 2 eggs | 49.1 x 66.70 ; 47.60 x 64.80 |

March 22 Seal Island, Pearl + Hermes Reef

| | | |
|----|--------|-------------------------------|
| AF | 2 eggs | 47.50 x 67.00 ; 45.00 x 68.00 |
| AF | 1 egg | 47.70 x 72.05 |

March 22 Kittery Island, Pearl + Hermes Reef

| | | |
|----|--------|-------------------------------|
| AF | 1 egg | 44.40 x 66.20 |
| AF | 2 eggs | 48.60 x 72.00 ; 48.25 x 65.80 |
| AF | 1 egg | 49.70 x 68.00 |
| AM | 2 eggs | 46.50 x 65.90 ; 43.45 x 62.75 |
| AF | 1 egg | 50.95 x 64.90 |
| AM | 2 eggs | 45.75 x 70.70 ; 47.10 x 70.70 |
| AF | 2 eggs | 47.70 x 65.45 ; 47.00 x 64.20 |

Hackman, C.D.
1967

Egg Measurements + nest descriptions

Red-footed Booby (Sula sula)

22 March Southeast Is., Pearl + Hermes
(Egg measurements are in millimeters)

| Nest Site | Height | Diameter | Depth | Construction Materials | Contents |
|--|--------|----------|--------|--|-------------------|
| in <u>Scaevola</u> | 18" | 11" | 5" | <u>Tribulus</u> , <u>Boerhaavia</u> + <u>Solanum</u> | 42.00 x 61.6 |
| on ground in <u>Solanum</u> | 9" | 12" | 7" | <u>Tribulus</u> | small naked chick |
| on ground in <u>Solanum</u> | 14" | 12" | 6" | <u>Tribulus</u> | small naked chick |
| on ground in <u>Solanum</u> | — | — | — | <u>Tribulus</u> | small naked chick |
| on ground in <u>Solanum</u> | 15" | 13" | 9" | <u>Tribulus</u> , <u>Boerhaavia</u> , <u>Solanum</u> | 39.40 x 63.35 |
| on ground in <u>Solanum</u> | 4" | 15" | 1" | <u>Tribulus</u> | Empty |
| on ground in <u>Solanum</u> | 0" | 18" | 9" | <u>Tribulus</u> , <u>Boerhaavia</u> , <u>Solanum</u> | pipped egg |
| on ground in <u>Solanum</u> , <u>Boerhaavia</u> , <u>Tribulus</u> + <u>Sicyos</u> | — | — | — | <u>Tribulus</u> , <u>Boerhaavia</u> , <u>Solanum</u> | small naked chick |
| on ground (same as preceding) | 15" | 12" | 4" | (Same as preceding) | small naked chick |
| on ground in <u>Sicyos</u> + <u>Solanum</u> | 16" | 17" | 3" | <u>Tribulus</u> | 43.50 x 64.80 |
| on ground in <u>Solanum</u> , <u>Boerhaavia</u> , <u>Tribulus</u> + <u>Sicyos</u> | 14" | 12" | 4" | <u>Tribulus</u> , <u>Boerhaavia</u> , <u>Solanum</u> | 42.05 x 63.5 |
| on ground (same as preceding) | 9" | 10" | 1 1/2" | (Same as preceding) | 39.45 x 54.75 |
| on ground (same as preceding) | — | — | — | (Same as preceding) | 40.35 x 60.25 |
| on ground in <u>Sicyos</u> | 11" | 12" | 2" | <u>Tribulus</u> | 41.10 x 64.05 |

Hackman, C.D.
1967

Egg Measurements + Nest Descriptions


Brown Booby (Sula leucogaster)

Page #2 (continuation)

23 March

Southeast Is., Pearl + Hermes Reef

(All egg measurements are in millimeters.)

- 14.) AF 1 egg: 43.65 x 63.65. Diameter 16", bowl 5" and poorly defined, Depression 1". Construction primarily of grass stems + roots (Cynodon + Lepturus?) with very little Tribulus and a few small pieces of driftwood + several feathers.
- 15.) AF 2 eggs: 41.15 x 57.15; 42.80 x 63.00. Diameter 21"; Bowl 9", Depression 2 3/4". Construction of Tribulus, grass, Solanum leaves and several feathers.
- 16.) AF 1 egg: 39.90 x 68.45. Diameter 19", Bowl 8" well defined, Depression 2 1/4". Construction mostly of grass stems (Cynodon?) Tribulus and driftwood. One feather in nest of this species. Egg was bullet-shaped: .
- 17.) AF 2 eggs: 38.85 x 60.95; 40.45 x 60.75. Diameter 18", Bowl 8", Depression 1 3/4". Construction materials: Tribulus, Sicyos and driftwood.
- 18.) AM 1 egg: 41.10 x 60.60. Diameter 16", Bowl 7", Depression 2 1/2". Construction of ~~Tribulus~~ Tribulus with some grass (Cynodon?).
- 19.) AF 2 eggs: 40.40 x 63.45; 41.2 x 61.9. Diameter 19", Bowl 7 x 9", Depression 1 3/4". Construction: Tribulus, ^{Sicyos}~~Sicyos~~, grass stems + roots (Cynodon + Lepturus?) and feathers.
- 20.) AF 2 eggs: 41.50 x 61.60; 41.80 x 58.90. No measurements. Small amount of Tribulus and grass roots + numerous bones. Nest very scant and sloppy.

Hackman, C.D.
1967

Egg Measurements

Great Frigatebird (Fregata minor)

23 March

Southeast Is., Pearl + Hermes Reef

Checked 48 nests with the following results:

| | |
|-------------------------------|------|
| Adult female incubating egg | - 10 |
| Adult female on empty nest | - 6 |
| Adult male incubating egg | - 16 |
| Adult male on empty nest | - 14 |
| Empty nests, new construction | - 2 |
| | 48 |

All egg measurements in millimeters:

47.20 x 70.85
48.45 x 71.05
47.35 x 68.90
48.50 x 76.25 fresh
52.10 x 76.60
49.30 x 74.00
48.25 x 73.60
47.80 x 69.50
48.10 x 73.50
47.90 x 71.35
47.90 x 70.20
49.70 x 72.65
46.40 x 67.80
49.65 x 69.05
47.15 x 72.20 fresh
47.60 x 69.25
51.20 x 71.50
50.40 x 75.20
47.55 x 79.45
47.60 x 72.80

Hachmen, C.D.
1967

Egg Measurements

Great Frigatebird (*Fregata minor*)

March 28 Green Is., Kure Atoll

Nests located on top of dense *Scaevola* thickets from 5' to 8' in height. Nests difficult to get to because of dense vegetation. Measurement was stopped when other frigates (mostly subadult males) persisted in picking all unguarded nests apart. Four nests with eggs were not bothered by 7 nests that were new construction but still empty were destroyed.

All measurements in millimeters:

49.35 x 72.60 opaque

48.15 x 72.70 fresh

48.25 x 69.85 fresh

49.05 x 70.15 fresh

45.15 x 72.10 fresh

Results of 13 nests checked

AF:

Empty 6

1 egg 2

AM:

Empty 2

1 egg 3

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1967

Egg measurements

Blue-faced Booby (*Sula dactylatra*)

Kure Atoll, Green Is.

March 27-30

All nests located in the north + south antenna fields - the majority in the northern field. Nests on bare areas amid vegetation: *Verbesina*, grasses, etc.

South antenna field:

AM 2 eggs 44.45 x 72.5 ; 43.85 x 71.95

AM 2 eggs 45.5 x 60.55 ; 45.4 x 65.2

AM 2 eggs 43.3 x 66.3 ; 45.9 x 66.55

AM 1 egg 46.85 x 64.5

AF 2 eggs 46.6 x 62.9 ; 47.65 x 62.8

AF 1 egg 45.9 x 59.55

North antenna field:

AF 2 eggs 46.25 x 69.0 ; 44.9 x 61.95

AM 1 egg + 1 chick - not disturbed (chick small + naked - just hatched)

AF - 2 eggs 46.0 x 62.95 ; 46.85 x 65.25

AM 1 egg 47.35 x 63.3

AF 1 egg 47.0 x 66.6

AF 2 eggs 45.7 x 64.4 ; 43.7 x 66.5

AM w/ small naked chick several days old - not disturbed

AF 2 eggs 45.15 x 66.15 ; 42.95 x 69.25

AM 2 eggs 44.85 x 59.0 ; 47.4 x 70.85

AM (?) strange voice - gurgles - 2 eggs 45.35 x 66.2 ; 43.9 x 61.2

AF 1 egg 44.9 x 73.05

AM 1 egg 47.65 x 68.75

AM 2 eggs 47.4 x 72.7 ; 45.45 x 68.05

AM 2 eggs 44.9 x 66.95 ; 46.3 x 66.7

AF 1 egg 48.1 x 62.95

AF 2 eggs 46.45 x 68.6 ; 45.65 x 66.4

AM 2 eggs 45.5 x 62.0 ; 43.9 x 61.7 nest of sticks near bare area.

Additional nests:

AM:

2 eggs - 3

1 egg - 1

AF:

2 eggs - 4

1 egg - 1

Also: AF 1 egg 45.8 x 69.6

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1967

Egg measurements

Red-tailed Tropicbird (Phaethon rubricauda)

March 28 Green Is., Kure Atoll

All birds found in dense Scaevola thicket. Twenty birds were checked but only one had an egg:

44.20 x 66.00 mm.

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1967

Egg measurements + Nest Descriptions

Brown Booby (Sula leucogaster)

March 28 Green Is., Kure Atoll

AF 2 eggs width 16" x 17", bowl 9 1/2", depression 3".
Construction of Scaevola stems + branches Tribulus stems, some grass, feathers. On ground on edge of Scaevola thicket in Tribulus + Boerhaavia.
41.4 x 64.65 mm; 41.9 x 62.0 mm

AF 2 eggs. Nest very small, consisting only of a bowl + depression with scanty materials. Bowl 8" x 9", depression 1 1/2". Construction - very thin mat of Scaevola leaves and stems, Tribulus stems + some grass stems. Also several feathers. One sprig of fresh Tribulus in nest. Nest on edge of Scaevola thicket in Tribulus + Boerhaavia.
40.45 x 60.6; 41.0 x 62.2 mm.

AF 2 eggs Nest on small sand mound on edge of Scaevola thicket, near roadway. Construction of Scaevola leaves (fresh), Boerhaavia (fresh) and Scaevola branches and Tribulus stems. width 21" x 23", Bowl 9", Depression 2 3/4".
42.35 x 62.95 mm; 43.25 x 65.6 mm.

C. D. Hackman
1967

Field Notes

March 6 enroute to Kauai - U.S.S. Basswood W-388

Arrived at ship at 8:30 am and stowed gear on board. Kudde, + the rest of the crew, showed up at 9:30. Personnel on trip include:

Eugene Kudde, U.S. F+W Service, Leeward Is.
Wildlife Refuge Manager
Dr. John Maciuleh, USFWS, Cooperative Fisheries
Program, U of Hawaii
Ernie Kosaka, Hawaii State Fish + Game, Hilo
Dick Wass, Graduate Student of U of H.

Ship cleared the harbor at 10:15 and steamed toward Kauai at 11 knots in rough seas. The weather was Kona at departure with heavy rain, strong winds + fairly rough seas. The seas got increasingly rougher as we passed Kaena Point and out of the lee of Oahu.

There was too much wind + rain for much bird observation. Visibility was very poor in patch fog part of the way across. All observation was casual from the fantail of the ship.

For most of the crossing there were 16 Black-footed + 2 Laysan Albatross following the ship. About 25 Pomarine Jaegers were seen between Oahu and Kauai - all but one were in immature plumage. About 35 Red-footed Booby were seen within sight of Oahu and most of these were on the water - apparently because of the rain squalls. Two Brown Boobies were seen: 1 in the Honolulu Harbor basin before departure and one half way to Kauai. No other species were observed.

Since I only got about 3 hours sleep last night I sacked out at 1:30 p.m. - feeling a little seasick. Held out until evening when banana ice cream on top of greasy french fries and hamburger did the trick. First time I've been sick in five trips. This ship rolls differently from the large fleet trips + this gets to me.

Arrived at Nawiliwili Harbor, Kauai at 8:30 p.m. + tied up at the pier. Scheduled to depart tomorrow morning at 8:45 a.m. + the plan is to spend most of the day here trying

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1967

Field Notes

Oahu to Kauai - March 6

to calibrate a buoy and the Loran Station here on Kauai. If they are unsuccessful they'll return to Nawiliwili harbor again tomorrow night and try again the next day.

Spent two hours (until 12 ~~midnight~~) rooting my gear out of the after hold. My two trunks were on the bottom of the pile. Took all of the equipment I'll need for this trip out of the trunks + put it in the wall ~~lock~~ locker by my bunk. For the rest of the trip my island preparations should be a relatively easy matter.

March 7 Kauai

Left Nawiliwili Harbor at 8:15 and steamed up to Kilanea Light - arriving there at 10:40. The ship stayed in the vicinity of the light until 1:15 p.m. before steaming toward Niihau.

Very few birds near the lighthouse only about 7 Red-footed Booby seen during the entire stay of 2 1/2 hours. None were marked. Only saw 1 Wedge-tail near Kilanea Pt. There were a number of White-capped Noddies in the area near the lighthouse.

By 1:45 p.m. all but 1 of the 9 Black-footed Albatross that had followed us to Kilanea Pt. had stopped following and gone ~~on~~ to more important business.

The sky was threatening this morning as we left the harbor and the seas were still rough. By 1:45 p.m. the seas were starting to smooth out and the sky was clearing to the N.E.

Spent the rest of the afternoon on the flying bridge making bird observations.

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1967

Species Account

Turtle species

March 9 Nihoa Island
1 large, greenish turtle in cove near landing spot
as we

March 10 Necker Island
Three were sunning on the edge of Shark Bay. Two
of these were successfully flipped and tagged. Several
smaller turtles were also seen around the island.

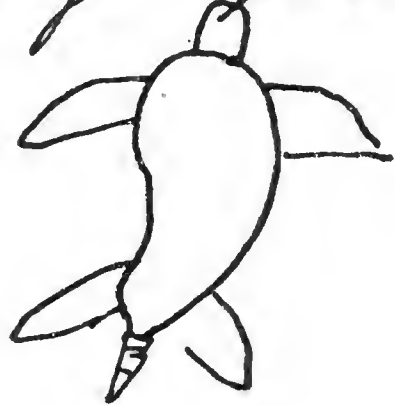
March 11 East Is., French Frigate Shoals

One medium-sized turtle was observed offshore
for several hours in the afternoon.

March 13 Trig Is., French Frigate Shoals

Managed to flip + tag ¹³ of 23 turtles.
Most were very large males. One female ~~was~~
~~was~~ had a serious infection or inflammation in its
eye. A male had a large portion of its left rear
flipper missing. Another male was deformed on its
left side with a large depression:

Recaptured 2 turtles
that were previously
tagged.



March 14 Whale-Shale, Fr. Fr. Shoals
None observed

March 14 Trig Is., Fr. Fr. Shoals

Flipped + tagged an additional 15 turtles out of ~~23~~
23 that were on the beach.

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1967

Species Account

Turtles

March 14 Whale-Shale, FF Sh
None

March 17 off Laysan Island

One large turtle was ~~seen~~ observed from the ship around
1:30 pm.

March 19 Laysan Island

2 large turtles were observed on the beaches during a
complete island circuit. One large male was flipped + tagged.

March 20 Laysan Island
Tagged 9 new + ~~recaptured~~

March 21-23 Southeast Is., P+H Reef
Recovered 5 + tagged 10 new.

March 26 Midway Atoll

Saw 4 while flying over the lagoon enroute to
Kure Atoll.

March 26-30 Green Is., Kure Atoll

None observed.

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1967

Species Account

Dolphin sp.

March 9 leaving Nihoa Island

three large dolphin along starboard side for 5 or 10 minutes about 5 miles from Nihoa. Moved off in direction of ~~Nihoa~~ Nihoa.

March 14 passing Gardner Pinnacles

About 7 on starboard side for several minutes. Large species, light brown dorsal fin.

March 26 between Midway and Kure Atolls

Saw three light brown cetaceans in shallow area (light blue) that was surrounded by deep blue ocean. Observation was made from about 1500 feet.

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1967

Species Account

Insects

March 8 + 9 Nihoa Island

Didn't have much time for detailed observation. Found a false scorpion under some lava rock about $\frac{1}{4}$ " long. Saw at least four species of ant. Large cockroaches were around the campsite at night. Moths of all sizes were abundant. Several species of fly and numerous small winged insects were observed. Several species of spiders were seen but none of the large garden variety were observed. Isopods were everywhere. At least one species of ~~ladybird~~ ladybird beetle was seen. Several species of weevil.

March 10 Necker Island

Didn't have much time to observe insects on this visit. There are at least two species of fly one green species and one resembling the common house fly. Saw only 1 species of ant. Large cockroach ~~and~~ is also present.

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1967

March 8 Nihoa Island

Large black ant is abundant on open ground and under vegetation. Runs rapidly in an erratic manner when disturbed.

This species was also observed on French Frigate Shoals but was not seen on Necker Island (no thorough search was made) or the more northern islands of the chain. This species or one very similar to it is common on some of the islands in the Phoenix Group.

Large reddish ant was found only in crevices or holes on large pieces of coral rubble and was very slow in its movements. The ant appeared reluctant to move far from the cover provided by the holes and crevices in the coral rock.

Small reddish ant was collected from the same piece of coral rubble as was the larger one.

The ant with the light, transparent abdomen was found under an overturned rock.

All specimens were taken in the old Polynesian ruins $\frac{1}{3}$ of the way ~~toward~~ to Tanager Peak.

No other types were encountered but time was limited and no great effort was made.

March 10 Necker Island

Saw but did not collect a small black ant while censusing bird populations. After a light rain shower I could not find any ants. Had to depart shortly after this.

March 11-14 French Frigate Shoals

Collected at least 4 types but left vial on the island. Several Smithsonian field men will visit the island in Mid-May + will have instructions to return this vial to Honolulu if it can be located.

Laysan + Lisianski

Premature departure from Laysan precluded collection of ants. Very short visit to Lisianski - too many other activities

Southeast, Pearl + Hermes Reef

Forgot to collect specimens.

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1967

March 29

Green Island, Kure Atoll

Found a large number of ants on the fresh carcass of a Great Frigatebird (Fregata minor) and trailed them back to their nest - under a rock. All specimens in the vial marked #1 were taken from the bottom surface of the rock. Many eggs were found - some collected.

Specimens in Vial #2 were taken from the carcass of the Frigatebird.

Specimens collected at the request of Dr. John Macrolek, Bureau of Commercial Fisheries, Cooperative Fisheries Program, for a man named _____, at the Univ. of Hawaii who is studying ants in the Leeward Island Chain with hopes of revising + clarifying the taxonomy.

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1967

Field Notes

March 8

Nihoa Island

Up at 5:30 am. with the ship laying only 1000 yards off the north side of the island. Too much surf on that side so we swung around island + checked landing spots on the south shore. Made landings in 2 trips between 8-9 am. Spent rest of morning until noon in hauling gear up to old Hawaiian ruins high on the hillside. Left on island - 9:45 am.

Set up a mist net in a small gully near some Pritchardia to try and capture some Nihoa Finches. Gene + I spent about one hour putting net up and then attempting to drive some birds in - no success in driving. Gene + Ernie went across island to check food ~~at~~ cache while I guarded nets and took some egg measurements from Sooty Tern + Great Frigate.

Spent the rest of the day near the nets + got only 6 birds to 6 p.m. Got measurements from 21 ~~eggs of~~ ~~eggs of~~ Sooty Terns + 21 from H. Frigatebird and 2 from Red-footed Booby.

Vegetation Sida, Solanum blooming. Finches feeding on Solanum blossom. Diogenes flowering. ~~Antonia~~ Sesuvium blooming. Small palms observed growing here + there. Ceanothus flowering.

Sacked out at 9:30 with a light rain shower + a great deal of lightning off to the south. Three of us squeezed into a two man tent + slept fairly well in spite of the fact that most of the air mattresses have been ~~punctured~~ punctured in handling.

Heard a number of Bulwer's Petrels calling during the night.

C.D. Hackman
1967

Field Notes

March 9

Nihoa Island

Just before dawn it started to rain steadily. The sky to the SW looked ominous and doesn't show much sign of clearing. Hauling our gear down the gully + then getting it down the nearly ~~steep~~ sheer wall at the landing spot (about 100 ft.) high is really going to be great fun. Everyone is looking forward to it.

Started hauling gear down at 8:30 and then lowered it down the cliff side by rope. This took until about 10 am. Got the boats loaded + ~~got~~ departed island by 10:40 am. Punctured the bow of the rubber boat in loading the gear. The boat partially deflated but was still good enough to come back + pick up the people + the cage full of Nihoa Finches (42 birds) we had managed to capture.

Heard the Bulwer's Petrel giving an unfamiliar (to me) call last night. Call was quite unlike the coo-coo-coo note that is usually heard. Call consisted of a series of throaty phrases + ~~some~~ whistles - rather pleasant to listen to:

uh uh eh eh eh eh whooo haw

Call is a little hard to describe since I only heard it given three times clearly. The call was heard at a distance, on numerous occasions, throughout the night.

Spent several hours straightening out gear + hanging things up to dry in the forward hold. Ship was in and out of heavy rain squalls until after dark with generally poor visibility. Saw a waterspout around 3 pm on the edge of one of the rain squalls.

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1967

Species Account

Whales species

Mauiliuli Harbor, Lanai

Saw 3 whales blowing about 10 minutes after leaving the harbor. Unknown species - too distant.

March 16 Laysan Island

Saw two whales blowing (five times) off starboard bow as we approached Laysan. Both sounded as the ship neared & neither was seen again.

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1967

Catalog

March 8

Nihoa Island

CDH 800 Hippoboscids sp. from nest (w/egg) of Great Frigatebird. Each nest had 25-50 hippoboscids in a cluster below the egg being incubated.

CDH 801 Mite from Whale - Skate. Found under driftwood on the edge of a small Sooty Tern colony. Mite was jet black & glossy when collected.

update History A
Description HI



Species Accounts

Reptiles

Hawaiian Monk Seals

Species Table

Bibliography

Literature Cited

Serel Gardner

Nihoa



Hsk Kule about
citations

Hackman, C.D.

Field Notes

March 10

Necker Island

After our Nihoa experience we learned our lesson. Today we travelled light. We took far too much gear onto Nihoa. We left the ship around 8:30 am but didn't land on the island until 10:40 because of outboard motor problems. The landing looks quite scary because ~~the~~ it is made ~~at~~ onto a rock shelf but our landing was uneventful. The surge at this spot picks the raft up almost even with the top of the shelf (when you jump off) and then drops about 8-10 feet as the water recedes (when you really hang on.)

Immediately after landing we flipped and tagged two turtles and checked out 11 seals (1 subadult) that were sunning on the edge of Shark Bay.

We then split up. (John + Dick to survey the reef life) the rest of us to make a bird survey. On the way back I counted several species + took egg measurements.

This island is up and down much like Nihoa but is much easier to work because it isn't heavily vegetated. Vegetation is patchy on the ridges + lush (in a few areas) on the slopes. Plants: Seabassia, Chenopodium, Panicum, Portulaca and Portulacastrum (~~Portulaca~~ Sesuvium).

I almost took my camera onto this island but am glad I didn't. The fellow in the bow of the raft made several bad heaves with the gear. My bag ended up in the water but fortunately it floated or I would have lost my calipers + some other irreplaceable gear.

This island would have photographed beautifully and I missed some good pictures. Felt it would be better to miss a few pictures than to lose my camera completely.

Hackman, C.D.
1967

Field Notes

~~St. Lawrence~~

March 11, 1967

Ten Island, French Frigate Shoals

Arrived off the island around 8:30 am but dinked around on the ship until close to 10 am while both whale boats, the Boston Whale + another boat were put into the water + loaded. Went onto Ten Island + spent about 1 hour releasing Nihoa Furber + socializing. Left for East Island around 1200 and arrived there around 1:20 pm.

East Island, French Frigate Shoals
March 11, 1967

Immediately set up camp with Ernie + Gene. Then Gene + Dick went back to Ten Island to pick up John + the rest of our gear. Ernie + I set up camp + got things ready for the evening chow when the rest returned. Took a quick survey around the island to count seals + survey for birds.

The others returned at 5:15 - the wind is from the south so they had a rough trip across exposed water.... It was rough on the first trip + rougher the second.

After dinner, consisting of pork chops (freeze-dry) and corn - both cooked in butter we sat around + talked until after dark. Then Gene, Ernie + I banded Turnstones + Plovers for about an hour.

Returned to camp about 8:15, picked up some bands + went out with Ernie to look for banded birds. About 9:15 the rain started to fall and we were forced to quit. The wind is about 25 mph and the rain is really driving across the island mixed with sand - both stinging + getting in the eyes. The birds are very difficult to handle in this wind.

Returned to camp + wrote up field notes while waiting for the rain to stop. The rain came down harder + harder and the wind started to howl so I got in the tent and unrolled my sleeping bag and sacked out.

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1967

Field notes

March 11

East Island, French Frigate Shoals

Shortly after crawling in the bag the wind increased in intensity and the tent shook violently and leaked like a sieve. I had already had to move once because the place where my air mattress had been placed was soaking wet and my blanket roll was saturated. Fortunately I brought my heavy sleeping bag too. I climbed in, pulled my rain coat over the whole works and sacked out. Just after I dozed off the whole ~~works~~ works collapsed on top of us. Five miserable souls were standing around shivering in ankle deep water. This was at 11:30 p.m.

When the wind finally slackened I went out to assess the damage. The tent fly over the main part of the tent had ballooned and broken loose ~~at~~ the right ~~part~~ corner and had twisted the bowed tent supports like pretzels.

Everyone came out of the tent & we spent almost 1 1/2 hours fighting wind + rain to get a temporary affair erected. Many of the original poles were spunked up so we made do with whatever could be found.

After putting the tent back up the wind shifted to the northwest and forced us to do some additional guying. Then we had to go down to the beach and spend another hour dragging the Boston Whale up the beach further because the wind shift was driving water over the stern.

At 2:00 am we retired to the tent and brewed a pot of cowboy coffee and polished off a bag of Peanut Butter cookies. Then we settled down in our damp clothes + sleeping bags for the rest of a miserable night.

March 12 East Island, French Frigate Shoals

Woke up feeling miserable - cramped, chilled and clammy - at 6:30 to find the sun rising brightly in the east. We unloaded all of our gear from the tent + started drying things out. This, plus a few minor odds and ends, consumed the morning. At 12:10 Gene, Ernie and I headed back to Tern Island with a load of gear. We had decided we wouldn't chance

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Field Notes

March 12

~~East~~ Tern Island, French Frigate Sh. another night on East Island with what was left of our battered tent. The trip took about 40 minutes. Gene + Ernie went back to pick up Dick + another load of gear while I stayed on Tern Is. + socialized for a while and joined in with a barbaque the Coast Guard boys were having. Gene + Dick made the final run to pick up John between 2:30 and 4 p.m. The weather was good and the trip easy.

After dark I went around the island looking for Laysan Terns + Golden Plovers to band. Saw only two shorebirds in two complete circuits of the island. On the NE side of the island I found a small colony of Bonin Island Petrels that were busily courting and burrowing. Banded 100 birds with #2 bands which fit fine. Came back in at 10 p.m. and sacked out for the night.

March 13 Tern Is., French Frigate Shoals

~~East~~ We were awakened at 6 am by the security watch who informed us that our boat was gone. We got up and ran down to the pier and found that the boat wasn't gone. It had broke loose from its mooring and drifted under the other pier. The boat was full of water and the console, seats, etc. had been pounded to a pulp by the waves under the pier. The 40 hp. motor on back was battered but apparently suffered only minor damage. The 20 hp motor that had been in the boat was completely submerged.

We spent the rest of the morning salvaging the boat + trying to repair the damage to the 20 hp. motor. The hull of the boat wasn't seriously damaged but just about every other part of the boat ~~was~~ was demolished.

Around 1 p.m. the C.G. took us to Trig Island where we made an island survey + tagged seal pups and turtles. Tagging turtles + seals is pretty hard work.

Returned to Tern Island by 4 p.m. and messed around until dark. Made a complete circuit of the island with Gene + Ernie to look for shorebirds and didn't find one.

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Field Notes

March 13

Ten Is., Fr. Frigate Shoals

Since our tent was badly damaged during the first night on FFSH. I dug out the Smithsonian tent that was stored on Ten Island in September. Gene + I put the tent up to check it out. The tent had a few minor holes here and there and had mildewed badly on the back wall. We took the tent to use on the rest of this trip along with the long stakes + tent poles.

Also took 4 boxes of the Starlite Freeze-Dry food because bugs have ruined most that was left on Ten Islands. The bottom 5 cases have been worked over by ~~weevils~~ ^{weevils}. Told the CO ~~that~~ he could throw the rest away if he wanted to. Also gave them permission to use the 7-man raft that was on the island in return for their promise to maintain it. The valves on the boat are all fouled up from salt corrosion. I'll send them new valves from Honolulu they'll put the raft back in working condition.

Saw a King-billed Gull (white plumage) on Trig Island.

March 14

Whale-Shale Is., French Frigate Shoals

Got up early + went to Whale-Shale Island to make a survey + tag seals + turtles. ~~There were no turtles.~~ Found one seal pup with umbilical cord still attached + later found the after birth on the beach. No turtles.

Saw the gull again + got one bad shot off at it but missed by about 4 feet. After that the gull was skittish + wouldn't permit a close approach.

Finished up on Whale-Shale + headed for Trig Is.

March 14

Trig Is., French Frigate Shoals

Tagged 14 more turtles + several more seals. Checked for new eggs + recent hatchings. Spent about 1 hour on the island.

Ruined half a roll of film when the camera wound it around the spindle instead of on the roller. Had to open the back + release the film.

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Field Notes

March 14

Ten Is., French Frigate Shoals

Since there isn't much one can do right on Ten Island (day or night) we devoted the entire afternoon to a picnic given for the crew of the Basswood by the Ten Is. crew. Sat around chewing the fat + drinking beer with everyone until 5:30 when all hands departed for the ship to resume the journey to Gardner Pinnacles.

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Field Notes

March 15 passing Gardner Pinnacles

Sighted island at 6:30 am. Sea was rough and surf was pounding halfway up the side of the island. The ship didn't even slow down. We passed about 800 yards to the north of the island. A number of Blue-faced Boobies came out to greet us and followed along for about 1 hour or so. Spent the rest of the day cruising toward Laysan Island.

Gene Knicker saw a Blancos Bull on the island as we passed. I missed it!

March 16 Off Laysan Island

Ship stood to off of Laysan Island around 8:30 am. One whaleboat was lowered full of gear with Gene, Ernie + me in the advance party. The wind + surf looked wrong but we wanted to go in and take a closer look. In close we could see the surf breaking in and over the channel. The rollers, in close, were about 15 feet high.

Spent the rest of the day on the ship just loitering around catching up on field notes + other odds + ends.

The crew spent the greater portion of the day fishing off the fantail. Around 1 p.m. one fellow hooked into a 7 foot grey shark and after a lot of wrestling around the crew managed to pull it and then drag it onto the bang deck forward. The shark was a female. Several other sharks were caught during the afternoon. The crew also devoted a great deal of time to fishing for a species of jack from the fantail - several of these were caught.

Spent some time on the flying bridge watching bird flocks but saw nothing unusual.

March 17 Off Laysan Island

Up at six am + out on deck to check bird populations + take a look at the surf. The wind is still from the west and there is a heavy swell from the NW directly into the channel. The ship made a complete circuit of the island around 8:30 and all landing areas had heavy surf. The ship anchored about 1000 yards off the SW shore for the remainder of the day. I devoted the rest of the day to a criticism of the Warner Commission Report on

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Field Notes

March 17 Off Laysan Island

the Kennedy assassination + spent a good portion of the day watching the bird flocks around + over the island. Nothing unusual.

Until 9 am there were thousands of albatross + Bonin Is. Petrels over the ocean around the island. Through the remainder of the day there were small numbers of albatross present including the soho brigade of Black-footed albatross that hung around the ship patiently awaiting the periodic garbage dumpings. There were about 50 of these birds.

After lunch Dick + I teased several of these birds with small pieces of cheese. There was intense competition between the three birds with one bird almost completely dominating the other two. The most aggressive of the three submerged all but its tail several times to retrieve rapidly sinking pieces of cheese.

Once, after the ^{dominant} ~~dominant~~ bird dived (much like a typical puddle duck) and failed one of the other two birds ran about 10 feet across the water and dove, completely submerging itself for about 5 seconds. This bird dove to a depth of about 4 feet but not without great effort. The bird that successfully dove then spent about two minutes in ruffling, rearranging + preening feathers.

Bl-f. Albatross and sharks were observed feeding together on several occasions during the day but not harmoniously.

When sharks were present the albatross were nervous and kept their wings elevated to facilitate quick take-off. Sharks were within 2-3 feet off of some of the albatross at times. These birds either pattered out of the way or took off. When the sharks lost interest in the garbage the birds returned.

It was also observed that the Black-f. Albatross does not appear to be too fond of vegetables (raw, for salads). Around noon a large number of pieces of cabbage, lettuce +

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Field Notes

March 17

Off Laysan Island

celery were discarded. This quickly drew about 15 Bl.-f. Albatross but none were observed eating anything. All picked at a few items and then took off.

One Black-f. Albatross in aberrant plumage was observed several times yesterday. All primaries on the right wing were pure white. The bird also had a rectangular-shaped white area across the belly.

There are very few Sooty Terns around the island and from what can be seen from offshore no large colony on Laysan at this time. According to Gene Kridler's records most species should have chicks by this time. Last year at this time in March he was finding well ~~feathered~~ grown (at least $\frac{1}{2}$) chicks for most species. So far on the trip we have found only a few nestlings for such species as Blue-f. + Red-f. Booby. Mostly we are finding nests under construction and fresh or only moderately incubated eggs. I had hoped for large numbers of chicks so that weights and complete plumage descriptions could be made. To date, I have been able only to take egg measurements for a few species and have taken no weights from chicks. The short time available on each island when combined with the misfortune and bad weather that have been experienced have precluded ~~weights~~ taking weights & descriptions from the few chicks thus far encountered. Very few birds have been checked to this ~~point~~ point because we have been unable to work at night at the choice locations because of the weather.

If we can get onto Laysan tomorrow we still plan to spend 2 nights and 3 days there so perhaps I'll be able to get something done.

March 18

Laysan Island

After nearly two days of idle waiting the surf moderated and we were able to land. Final got the last boat load of gear + people on the island at 1:20 p.m. Set up camp + then began capturing Laysan Finches. It took us until ~~mid~~ nearly dark to capture

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Field Notes

March 18

Laysan Island

the 100 birds we were after. These birds are certainly much easier to capture than were the ones on Nihoa Island. A full ~~half~~ half a day of tramping around on Nihoa only yielded 32 birds whereas several hours here yielded more than the 100 birds we wanted. These birds will be transplanted on Southeast Island, Pearl + Hermes Reef.

The first impression is that these birds are more colorful than those on Nihoa. They appear somewhat larger and their bills seem to be thicker with a much more pronounced hook on the upper mandible. The impression is that they also sing more but this may be simply due to the larger number present here on Laysan.

When we first arrived I scanned the shore of the lagoon with my binoculars. There appeared to be several hundred shorebirds in numerous large groups. These will have to be checked sometime tomorrow.

After dark Gene and the others went down to the lagoon to capture some Laysan Teal while I wandered around checking birds for bands. In five hours I covered about $\frac{1}{4}$ of the island. This didn't meet with much success where most species of terns were concerned since the moon is slightly passed $\frac{1}{4}$ full and these species are pretty alert. Although about 400 albatross were checked none were found with bands. Only a few of the several hundred Bonin Island Petrels that were checked were banded and these were all in the vicinity of the campsite.

Sacked out at 2 a.m.

March 19

Laysan Island

Woke up around 6:30 and ate a hearty breakfast of coffee and peanut butter + jam sandwiches. Around 8:30 am Dick Waco and I started off from camp on a complete circuit of the island. Our purpose was to count seals + shorebirds + obtain general observations. The others followed us at a distance of about $\frac{1}{2}$ mile tagging seal pups

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Field Notes

March 19

Laysan Island

and subadults. We counted 199 seals of all ages on a complete survey of the island. The walk around Laysan is a long but interesting one. Fish balls and bottles of all shapes, sizes and descriptions litter the beaches along the north and east shores. On some areas there may be as many as 75-100 fish balls in less than 50 feet of beach. The junk found on the beach is fascinating. Large numbers of light bulbs are found high on the beach - unbroken. We even found some neon bulbs. Among items found today: 3 rubber balls, a plaque marked "No 3 Boat", brilliant red and blue light bulbs, a car headlight (sealed beam), wine & whiskey bottles galore, a canteen (US Army type) made in 1918, a military thermos jug, float corker & poles, a can of metal polish, an oxygen cylinder, and one shoe clog among other things. We found several enormous pieces of bamboo on the beach - one was 30 feet long and had a diameter of about 9-11" at the butt end.

Along the east beach we found many small piles of portuguese man-o-war. These were all small - about $\frac{1}{2}$ to 3' long and light blue in color. We had seen large numbers floating by the ship during the two days we had to lay off of the island.

I am continually amazed by the lack of abundant life on these northern island reefs. The variety of fish and other creatures is minimal when compared with that which exists on the reefs of the equatorial islands. These northern islands are almost barren in comparison. There are also very few crabs on these northern islands when compared with those to the south.

We made the complete island circuit in little more than 3 1/2 hours. The six or so miles around seem like 20 toward the last because walking in the loose sand is difficult and quickly tires a person.

After eating a well rounded lunch: 2 glasses of Tang, 2 cups coffee, + 2 peanut butter + jam sandwiches I headed for the lagoon to make a shorebird count + to take a few pictures of some of the birds that were present. Around 2 p.m. I was toying with

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Field Notes

March 19

Laysan Island

a pair of binoculars + my single lens reflex camera in an attempt to obtain a decent photograph of a Laysan Teal. It seems to work fairly well but I couldn't hold the binoculars + the camera steady enough. I was just starting back toward camp to borrow Ernie's tripod before going completely around the lagoon when the ship began to blow its siren and horn. When I arrived in camp I learned that the baromet was falling + the surf was rapidly building up again + we had been requested to come off of the island. Since there were 20 some men from the ship who were on the island picking up fish balls and looking at the birds it took about 4 trips with the whole boat to get everyone and all of the gear back to the ship.

During one of the trips they cracked 3 ribs on the boat + caused some minor hull damage when the boat was plowed by a large wave that was just starting to break. One crewman got a nasty bump on the head as the boat pitched over the wave.

So once again something has come up to ruin all our plans + cut into our field work time. I had planned to measure eggs of a number of species tonight as well as survey the southern + eastern quarters of the island. On this whole trip I have only had a little more than 1 full night of working time. Hardly enough in which to accomplish anything.

Checked about 75 Laysan Albatross nests the first afternoon and night on the island but found no fleas in the nests. Also checked in about 30 Black-footed nests but found no fleas there either.

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Field Notes

March 20

Lisianski Island

Landed on the island around 9 am in the Whale boat. Spent until 1:30 p.m. making a complete island circuit with Gene + Ernie in order to census and tag seals + turtles. Returned to camp and ate a quick lunch before heading out to measure eggs.

The thick growths of Scaevola make walking a chore, especially when combined with the large number of sea-water-petted burrows on the island. The soil on this island is the finest sand I've encountered on any island and the burrows cave in easily. Normally, as light as I am, I can skitter across the tops of burrows without caring too many of them in. This was not true on Laysan and certainly isn't true on this island. About halfway across the island a burrow caved in while I was measuring a Red-footed Booby egg and I cracked my knee against one of the Scaevolas. The knee turned black + blue almost immediately but didn't hurt very much.

Since ~~the~~ we were scheduled to leave the island at 5:00 pm there wasn't time enough for a complete survey of the island or anything more than a cursory check of the various bird populations. In the 3 1/2 hours I barely managed to run a fairly decent survey of the southern half of the island.

Saw several banded birds but couldn't capture them - both Red-footed Boobies.

The whaleboat returned at 4:30 p.m. instead of at 5 pm as scheduled so I was unable to get more than 12 sets of Blue-faced Booby egg measurements. During the 3 hours I was able to get measurements of eggs + nest descriptions for: 17 Hawaiian Noddy, 20 Great Frigate, 20 Grey-b. Tern, 18 Red-footed Booby, 13 Blue-faced Booby ad. Fairy Terns. Had to check over 200 nests for these measurements. The majority of Red-footed Boobies were on nests but only 18 birds, of 85 nests checked, had eggs. Had to check 60 Great Frigate nests to get 20 egg measurements.

As with other island populations, on this trip, we are a little too early. Most birds are on fresh or barely incubated eggs. Sooty Terns are swimming but not down during the day. The Blue-faced Boobies are the exception to this statement. On Lisianski we found one large downy young and four (4) small downy young in addition to four nests with small naked chicks.

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Field Notes

March 20

Lisianski Island

Vegetation was fairly lush. Eragrostis, Portulaca and Trichurus were all in full bloom. The Ironwood trees and dense growths of Scaevola were in good condition as were the two coconut trees (we drank the milk from two coconuts + planted another).

During the island circuit we found several very small turtles which we tagged. These turtles could be easily picked up + carried by one man. Aside from the several we tagged another five or six of similar size were observed in the water.

We saw no sharks around the inshore reef nor did John and Dick who did a great deal of diving in several areas. When we returned to the ship we learned that there had been what they described as "two hundred" around the ship. At least 25 had been shot with an M-1 rifle and had been seen to sink. The crew of the ship seemed to have enjoyed the day.

We were back on the ship by 5:10 pm and heading for Pearl + Hermes by 6 pm.

Sacked out at 8:15 p.m.

March 21

Pearl + Hermes Reef

(Next page)

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Field Notes

March 21 Southeast Is., Pearl + Hermes Reef

LT
LF
AT
Arrived off the atoll at 6:50 am and piddled around loading boats, etc., etc. for quite a while. Finally got into the island by whale boat around 9 am. + had camp pitched by 9:45 am. Spent until noon banding + releasing Laysan Teal and Laysan Finch here on Southeast.

The first two ducks released took off and headed straight out to sea - out of sight. We wing clipped the rest of the birds that were released. None of the Laysan Finches made any attempt to leave the island. Of the Laysan Finches, males were color banded red and females color-banded blue.

The weather looked threatening all day and was quite cool (about 64° with a stiff breeze) and we all froze toward evening. Built a nice cozy bonfire and sat around it while eating lobsters cooked in butter and chili and beans. It was a delicious dinner with the lobsters courtesy of John + Dick who did some dining this afternoon and managed to capture about five big lobsters.

Around 12:30 p.m. Gene, Ernie + I went around the island to tag seals + turtles. This took us about 3 hours because we got side-tracked + spent some time poking around on the reef. Ernie caught an octopus, that was right on the shoreline, after a lot of pulling and tugging and took it back to camp for fish bait. I spent about 1/2 hour busting open a coral head from which I obtained about 7 different types of crabs - all quite small.

Around 3:30 we returned to camp. Gene and I spent about 2 1/2 hours pulling up mustard weed just to see how much work would be involved in pulling all the plants on the island up. We pulled up an awful lot of mustard but hardly made a dent in the overall area. Gene said the military brought it here on one of their frequent visits. It appears that the mustard is rapidly spreading and that certain plants (*Boerhaavia* + *Tribulus*) cannot compete very well with it. Most plants are in full bloom at the present time.

After dark Gene + I went around the island checking birds for bands. Didn't have much luck with anything other than those stupid Black-footed Albatross. Everything else left while we were still quite a distance away. Even with an overcast sky it is much too light for effectively capturing most of these birds. We went around the island 1 1/2 times + didn't manage to capture much of anything.

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Field Notes

March 21 Southeast Is., Pearl + Hermes Reef
~~Laysan Island~~

It sprinkled several times while we were going around the island. It looks very much as if we're going to be rained upon before we get off of this island - if not tonight then tomorrow. At the present time (11:45 p.m.) it is sprinkling lightly again and the air has the feel of rain. The sky is extremely dark to the north and the wind is becoming brisk.

I gave up on the birds around 11 p.m. Gene quit around 10 p.m. + went back to camp while I chased around the island again to no avail. Everything on this island is spooky for some reason or other. Couldn't get within 100 feet of most that banded, Noddy or White-capped Noddies + only managed to capture 2 Blue-faced Boobies out of about 17 tried for.

March 22 Southeast, P + H Reef
~~Laysan Island~~

It went down to about 60° last night and everyone froze. No one wanted to get up because it was so chilly outside. A couple of brave souls finally got up and built a big bonfire in front of the tent and then the rest of us came out. It looked + felt like rain (which we could see off in the distance in several directions) so we stayed around camp doing little odds + ends.

Around 9 am I was out counting nests + measuring a few eggs ~~where~~ Gene called and asked me to go along with him to Grass, Seal + Kitting Islands to help tag seals + turtles. We left camp at 9:15 and arrived at Grass ~~at~~ around 10:00 am. There we worked Kitting and Seal Islands before returning to camp around 4 p.m. On the way back we stopped at several sand spits to count seals + turtles.

Tried a new tagging system today. It seems I'm too light to hold my end of the tag down when tagging the subadult seal so Gene did this (along with Ernie) and I put the tag on the flipper. The day before (+ on Lisianski) I had had several seals lift me up + come out under my side of the tags ... my weight didn't seem to slow the seals up one bit. Today, with the two heavy weights working the tags there were no problems.

The evening before we had lobsters (off the reef) fried in butter for dinner along with some freeze-dry chili and beans.

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Field Notes

March 22 Southeast Island. P+H Reef

It was a delicious + thoroughly enjoyable meal. Tonight Eric + I combined talents and fixed a dinner consisting of freeze dried pork chops, potatoes, apple sauce + some fish (off the reef). This was pretty fair but didn't compare with the lobster meal of the evening before.

Just before dusk Eric + I banded about 200 Black + Albation chicks with his hands.

After dark with the moon nearing 3/4 full (it cleared around 2:30 in the afternoon) it was impossible to capture very much. I saw many birds with bands but couldn't get close to many of them. The Sooties were down on the ground in several places but were difficult to capture. By running through them with a net and by standing in one place watching birds as they flew by I was able to capture 8 banded Sooty Terns. I saw many more banded birds than there but could not get close enough to capture them. I made 5 circuits of the island + then settled down for about 2 hours before finally giving up completely + packing out. Caught the following banded birds: 11 Red-f. Booby, 1 Bonin Is. Petrel, 8 Sooty Tern + 1 Laysan Teal between 8:30 pm and 1:45 am. I didn't try to band any because this would have represented futility at its best.

While returning from seal + turtle tagging on the other islands we stopped at one of the many sand spits because it had 9 visible seals (actually 14 were on the spit). I jumped out of the boat in my bare feet + walked down the beach to the far end. Near that far end there was a large area covered with jagged coral rubble. In the middle of the coral rubble sat one of the Laysan Teal we had wing-chipped ~~before~~ + released on Southeast Is. I got within 3 feet of the bird before it pattered away into deep water. Apparently the bird had wandered off of Southeast Is. + been blown down to this sand spit (about 4 miles from Southeast Is.)
Got up at 3 am + changed the battery to the light used by the ship for bearings.

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Field Notes

March 23 Southeast Is., P+H Reef

Woke up around 4 am to find everyone shuffling around mumbling. Eric had gotten them out of bed to pull the boat up high on the beach. They all shuffled back in (still mumbling to themselves) around 4:15 and went back to sleep.

Got up at 7 am + sat around the morning + camp fire until about 8 am. Eric, the Eric + I then spent the next two hours counting albatross chicks.

After finishing with the albatross chicks I got out all of my gear + made a circuit of the island to measure, measure eggs, describe nests + weigh chicks of several species. Finished this around 1:30 and returned to camp, ate lunch + helped break camp.

The whale boat came in at 2:30 and John + I returned to the ship with the bulk of the gear. John + I spent the rest of the afternoon ~~sorting~~ sorting gear + repacking. When Eric + the others returned we all pitched in and stored the rest of the gear. They had stayed on the island in order to spray the mustard that was growing so profusely there.

We were steaming toward Midway Is. by 6 p.m.

Spent the rest of the evening until 11:30 catching up on field notes + species accounts.

Odds + ends:

While on Grass Island yesterday I knelt down to measure a frigate egg and felt something crawl on me. The area near the frigate nests was infested with ticks. I collected a few of the lice but didn't have time for very many. In the short time spent on Grass (about 40 minutes) I was bitten at least 4 times - several behind my right knee. Found several ingested ticks later on. These are the first and only ticks I've seen all this trip. Have checked all other islands but haven't seen any. Couldn't find any mites either. John said he found one crawling on his leg on Southeast Is. but I couldn't find any on either of the two nights we were there.

Itinerary - March Leeward

Depart Honolulu 10:15 am March 6
 Arrive Nawiliwili Harbor 8:30 p.m. March 6
 Depart Nawiliwili Harbor 8:15 a.m. March 7
 Arrive Nihoa Island 0530 March 8, land on island 0945
 Depart Nihoa Island 1040 March 9
 Arrive Necker Island 10:40 March 10
 Depart Necker Island 5:15 p.m. March 10
 Arrive French Frigate Shoals 8:30 am March 11
 Depart French Frigate Shoals 5 p.m. March 14
 Arrive Gardner Pinnacles 8:30 March 15
 Depart Gardner Pinnacles 8:45 March 15
 Arrive Laysan Is. 8:30 March 16 landed, March 18
 Depart Laysan Is. 2:30 pm March 19
 Arrive Lisianski Is. 9:00 am March 20
 Depart Lisianski Is. 4:30 pm March 20
 Arrive Pearl + Hermes Reef March 21 10 am
 Depart Pearl + Hermes Reef March 23 2:30 pm
 Arrive Midway Island March 24 2:15 p.m.
 Depart Midway March 26 11:30 am
 Arrive Kure March 26 12:00 p.m.
 Depart Kure March 30 3:30 p.m.
 Arrive Midway March 30 3:55 p.m.
 Depart Midway April 1 4:45 pm. Midway Time
 Arrive Honolulu April 1

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Field Notes

March 23 Southeast Is., Pearl + Hermes Reef

odds + ends:

When we first arrived here we found a note from
 Char Robbins who had come down from Midway by helicopter.
 It seems they were caught in the storm that blew over
 that down + had to spend the night on North Island inside
 the helicopter. They had started toward Midway but were
 forced back by strong head winds. A plane had to fly down
 from Midway the next morning to drop fuel + oil for the
 choppers so they could make the return trip in the helicopter.

This morning I saw an orange streamered female frigate at
 close range flying up from an area in which a number of nests were
 located. I waited around the area but the bird did not return. It
 was impossible to determine if this bird was just loafing in company of
 the breeding birds or whether it was actually breeding on Southeast Is.

Left the island to return to the ship at 2:30 p.m.
 along with John and the major portion of our gear. Steve
 Ernie + Dick remained behind to spray the mustardweed
 in hopes of eradicating it.

As soon as I got on the ship I unloaded my tackle
 back into the truck + tried to pack all of my gear before
 Gene returned with his boat. When Gene returned he
 saw an adult Ring-billed Gull + yelled for me to
 bring the shotgun. I was down in the forward hold packing
 my second truck full of gear + no one seemed to know where I
 was - not that it made any difference since the shotgun + ammo
 were both stored down in the bottom of the first truck that had
 been packed.

At 6 pm. the ship pulled anchor + steamed toward
 Midway Island.

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Species Account

March 24 Sand Island, Midway Atoll

Arrived off of Midway at the crash of dawn + the crew began working bays at 7 am. (ship's held renale one hour early + everyone got up at 5 am.) Spent most of the ~~day~~ morning on the flying bridge watching the operation with the babies + observing bird movements too + from Midway.

The ship docked at 2 pm + cleaned the pier in the process. From what the crew said this was normal. Gene immediately called a taxi + then we waited and waited and waited - one finally came at 4:30 + ~~with~~ took us + all of our gear over to the BOQ. Chen Robbins + Dr. Van Harris assisted in getting me all set up in the BOQ.

Went to Chan's room + tried to call Dr. Pyle because my orders weren't here but could not reach him at either number so I called Linda instead + had a nice long (expensive, no doubt, chat with her).

Dr. Van Harris + I then spent several hours in an attempt to get a boat pass for me to go over to Easter Island for the evening. As it turned out we missed the boat because Chan was tied up with choir practice for the big Easter service. We then spent the rest of the evening (until 12:30 am) working albatross + Bonin Is. Petrels. It worked fairly smoothly - I caught the birds + carried them to Chan who checked numbers + banded or rebanded where needed + Dr. Van Harris ~~see~~ recorded.

March 25 Easter Is., Midway Atoll

Chan, Dr. Van Harris + I took the 9:30 boat over to Easter + spent about 4 hours poking around for Shearwater and several other species. While Chan photographed frigate counting I measured frigate + Red-f. Booby eggs and checked nesting progress in several areas.

Around 12:30 we went over + joined in a picnic with some Navy personnel on the Easter Is. beach.

Hackman, C.D.
1967

Field Notes

March 25 Easter Sand Is., Midway Atoll

Returned to the BOQ around 2 p.m. - stopping on the way to get a look at the local canary population - saw 4 birds, one singing beautifully.

Chan then spent about 1 hour trying to line up the Sunday flight to Kure for Ernie + me + finally succeeded after calling about 15 numbers.

Chan + I then hopped on our bikes (which are referred to as "horses" around here and rode down to the hangers so he could show me where to report for the Kure flight. We then pedalled about 1/2 mile further + checked the over-run area for the runways. These are normally full of water but are almost dry this year. Only saw 3 Pintail but Chan said there were about 9 around along with a European Widgeon, 2 American Widgeons + a Green-w. Teal which hasn't been seen lately. He also said that this has been an extremely poor year for shorebirds partly because of the dry run-off area.

Returned to the BOQ + spent several hours going over trip notes with Gene Kiddle and then went over to the club + had one beer + some pretzels before socking out at 11:30.

March 26 Sand Is., Midway to Kure Atoll.

Got up at 7:45 am and woke up Ernie so we could eat claw. We then hung around the mail slot until the mail that arrived on a special flight last night was posted. My orders were still not here.

Chan Robbins came in at 9:30 and gave me a wrap showing his albatross counts on February 9-10 and asked if I could make recanths of several areas to see how much mortality there had been since then + I promised to do so.

Hackman, C.D.
1967

Field Notes

March 26 Kure Atoll

Cruz + I left the BQ at 10 am + carried our gear about 4 blocks down to the hangar for the flight to Kure. We certainly didn't need any orders for this flight because no one asked for any ID at all.

Plane had to hold on the runway for 15 minutes until all of the albatross got out of the way. At the first sign of a break the pilot roared down the strip and immediately climbed to about 300 feet. The atoll is absolutely beautiful from the air with many brilliant shades of blue and green.

Saw four turtles in the Midway lagoon and several sharks. About halfway across I saw what appeared to be several dolphins sunning themselves in a patch of light blue water. The plane flew at 1500 feet on the crossing. From this altitude the Laysan Albatross looked about so wide + were easily identified as were the Black-footed Albatross, Red-footed Booby, Red-t. Tropicbird and Bonin Is. Petrel (which were numerous).

As the plane turned for the final wheels down approach onto Kure I counted 14 adult + 2 subadult seals on a sandspit south of Green Island. No turtles were observed.

Spent about 1 1/2 hours walking around 1 part of the island in an attempt to show the pilot a "moaning bird". Although we checked many burrows + beat through a lot of Scaevola none were found. The plane flew back to Midway around 2:15 pm.

I spent the rest of the afternoon going around the beach checking for Black-footed Albatross chicks. Returned to evening chow and then walked some more beach. By full dark I had finished 2/3 of the beach on the island.

Hackman, C.D.
1967

Field Notes

March 26 Green Is., Kure Atoll

Just before dark, while walking the beach for Black-footed Albatross chicks, I encountered two adult seals on the edge of the Scaevola on the beach crest. One seal immediately bellowed and charged rapidly (for a seal) but was easily evaded. I then tried standing my ground and the seal stopped short about 3 feet away and backed off. This ~~was~~ enabled me to move in closer and check the other seal for a tag because each time the seal retreated I moved forward.

The female was bleeding from the vagina and acted very sluggish. It seemed reluctant to move so I backed off to help from disturbing her too much. She was apparently beginning to give birth. Returned to the barracks for my camera + flash attachment + returned to the seals in hopes of actually witnessing and photographing a seal birth.

Got back to the two seals at 8:30 pm and sat around watching until 9:40 p.m. The seals had moved down onto the open beach from their narrow open area in the Scaevola and were quite nervous at my approach. The full moon was out by this time and the seals could see me clearly in spite of my headlamp. A check of the area in which they had initially been observed turned up some blood on the sand and on the vegetation but not a large quantity. I decided, finally, that if she was giving birth that the event was still many hours away so I left the seals and began capturing birds.

The bright moon was a great help to the birds but certainly didn't help me. I tried Red-footed Boobies roosting in the Scaevola on the south end but by the time I finished crossing through the heavy vegetation all were gone. I then worked a few banded albatrosses (Laysan) and had a great deal of trouble with them - even in restricted areas.

Around 10:30 I tried Bonin Is. Petrels but found that most of them were in the air. In 35 minutes I only caught 6 of 50 that were on the ground and 3 redgetails which were in burrows.

Hackman, C.D.
1967

Field Note

March 26 Green Is., Kure Atoll

I ran across about 25 Blue-faced Boobies, many on nests and decided to try them. The third bird I tried to handle ended the banding for the night. It saw me coming in the moonlight and began running. When I grabbed as it went by it was just a hit foot and got me on the hand. The bill sliced right through my pigskin glove and took a chunk out of my finger which then bled like a stuck pig. After it stopped bleeding I returned to the barracks hoping to find a couple of band aids so I could keep on banding without having to worry about getting a lot of band in the cut but everyone was sacked out ~~completely~~ for the night. Rather than risk getting sand in the wound - which could lead to a serious infection - I returned to my room + wrote up a few notes before sacking out at 12:30 am. The whole finger was numb anyhow + I couldn't have held too many big birds.

March 27 Green Is., Kure Atoll

Up at 7:20 am with breakfast shortly afterward.

At 8:10 am I went out to the north beach + finished the count of Black-footed Albatross chicks. This took a considerable amount of time because of the dense Scaevola everywhere. All of the little cul-de-sacs had to be checked out along the entire length of the shore. Finished up at 11:35 am - just in time to hurry back + change clothes + wash up for lunch.

I could not find the seal that looked as if it were giving birth last night. Perhaps I was wrong about it.

After lunch I counted Laysan chicks in the south antenna field and caught a few Blue-faced Boobies that had nests in the area. The eggs were measured. I was so busy doing this I hadn't noticed the weather. Just as I bent over to capture the last female in the area it started to rain buckets-full. Since it was about $\frac{1}{2}$ mile back to the barracks I got slightly drenched. Rain started at 2:30 p.m. along with gusting winds (20-30 mph.) Spent the rest of the afternoon catching up on field notes.

Went out at night for about 3 hours and almost froze.

Hackman, C.D.
1967

Field Notes

March 27 Green Is., Kure Atoll

The storm we had during the afternoon brought strong, cool winds with it from the NW (20-25 mph.) In this wind the birds had no trouble in taking off. Blue-faced Boobies + Browns just spray into the air + were gone before I could get near them. Bonin Is. Petrels were down in larger numbers than they were last night + I checked about 150 birds for 8 band returns.

Saw + checked 9 Wedge-tails + got 1 banded bird. Did not attempt to handle Red-footed Boobies because it was so light. Plan to wait one more night + hope that it will be darker then. The moon is coming up late each night now.

Couldn't get near the Red footed Boobies I tried. Make too much noise.

Around 10:45 p.m. I got extremely tired and could hardly keep my eyes open. Since I was attempting to work Blue-faced Boobies I got ~~frustrated~~ ^{frustrated} about 1 am time + then decided to call it a night. The pace of the past two months finally caught up with me. Sacked out at 11 and got a good night's sleep which should enable me to work the birds hard tomorrow night.

March 28 Green Is., Kure Atoll

Up at 7:10 am. Out measuring Blue-f. Booby eggs + checking ^{nests} the rest of the morning until 11:30.

I spent about 45 minutes in the bird shack looking over the gear stored there. We don't really have much gear there at the present time other than the freezer, motorcycle and the Ohaus scales. Lots of little odds and ends here and there but nothing of either great value or importance. Almost no blood supplies other than short pipettes. The door on the bird shack is in bad repair almost completely demolished and only hanging on by one hinge. I don't have time this visit, to devote to carpentry work since I don't think I'll have enough time as it is to finish all I've laid out. The next person stationed here, if there is a next one, should have instructions to repair this door. The person should take a new set of hinges with him.

Hackman, C.D.
1967

Field Notes

March 28

Green Is., Kure Atoll

Had planned to spend the afternoon checking Red-f. Booby + Great Frigate nests in the central roost area. I began taking egg measurements from frigates but had to stop. As soon as I forced a bird off its nest about 12 Sooty terns swooped in and completely dismantled it. Several adult females, without eggs, refused to leave their nests - they seemed to realize what would occur if they left. ~~Some~~ nests that contained eggs were not bothered but fresh empty ones were immediately descended upon and torn up. Each bird would swoop down + pull a piece of vegetation out, fly about 50 feet before dropping the vegetation and then wheel around + return for another swoop at the nest. Since I was afraid I'd totally disrupt the nesting cycle if I went around chasing all of the birds off their nests I just stopped completely.

I walked into the Scaevola toward a Red-footed Booby nest that was off by itself and the bird flew when I was about 75 feet away. While I struggled through the underbrush the frigates completely shredded the nest and broke the egg so I stopped working Red-foots, as well.

Spent the rest of the afternoon checking seals + counting some more Laysan Albatross chicks in various locations for comparison with the totals Chan Robbins had in February.

Saw a gull flying along the north beach around 4:15 pm but it was about 250 feet away and I couldn't tell bill or eye color since it was going away from me. The bird had a pure white tail + was marked on the wing tips like a Ring-billed Gull. The bird was an adult.

Ate chow + played billiards until dark. It looked threatening again + the wind was gusting. Headed out to ~~find~~ Blue-f. Boobies, Brown Boobies, Bonin Is. Petrel + anything else I can catch that ~~is~~ wears a band.

Hackman, C.D.
1967

Field Notes

March 28

Kure Island,

Checked for banded birds until 12:30 am when the moon came out bright and still nearly full. As soon as the moon came out I couldn't get near anything. Checked close to 200 birds and got 185 returns. The large number of returns for such a small sample resulted from working Blue-f. Booby and Laysan Albatross. For the first night since arriving here both were easy to approach. I had put off working these species and Red-footed Booby because of the moonlight. I didn't want to get them all upset and nervous before there were some dark nights. Sometime tonight I'll give the Red-footed Boobies a try because it will be dark until about 1:30 am.

The Blue-face Boobies were a little hard to capture because they kept running around. Only 2 of the 78 birds handled made attempts to fly - and those half-hearted. It took a little time to round each bird up. Capturing each bird involved running around in circles after the bird until it wandered into heavy vegetation or fell into a shallow burrow. I was afraid to run because the entire area was full of burrows - didn't feel like breaking a leg tonight.

There weren't as many Bonin Islands on the ground tonight but banded birds were easier to find. I saw the bands on all four of the birds I found tonight before the bird was picked up. The same applies to the four wedge-tails - the bands on all four were visible before the birds were captured.

Brown Boobies were very spooky this evening in contrast to last night when I was able to capture 8 out of 18 sitting on the Scaevola on the edge of the north antenna field. Tonight I grabbed one bird and the rest stampeded in all directions.

I almost wish I had more time here because I'm not going to finish with the albatross counts. Counting the chicks takes hours and hours because of the thick vegetation. I have devoted about 1 1/2 full days to this so far and still haven't come close to completing even half the island.

During my travels today I checked around 20 Red-tailed Tropicbirds today but only found one with an egg. Checking this thing is very time consuming because it requires crashing 15-20 feet into dense Scaevola (at times 10 feet high). This takes 5-10 minutes. Capturing the bird,

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Field Notes

March 28 Green Is., Kure Atoll

which usually manages to stay just out of your grasp as you keep getting hung up in the vegetation, may consume almost as much time or more. Once you have the bird checked for a band and have looked at the nest site the battle is only half over - you still have to get back out of the Scaevola. This may take three or four minutes of crashing around. It's all very frustrating and tiring. The same procedure must be followed in order to check Red-footed Booby or Great Frigate nests or to attempt to capture these two species. At night, as you flounder around in vegetation that is over your head, trying to figure out where in the hell you are, every bird within 100 yards in all directions is fully alerted and ready to flee. It's a wonder anyone manages to capture any Red-foots at all on this island because they all seem to be in the densest portions of the Scaevola where there are no trails.

Saw several Christmas Is. Shearwaters flying around late this afternoon but still have not found any on the ground at night. They aren't terribly common here to begin with and I haven't been able to discover their favorite haunts as yet.

The fellows here tell me that a large roost of Hawaiian Noddy Terns (White-capped) can be found near the end of the runway (west) (east). Several early evening trips up that way have failed to turn them up.

Returned to barracks + worked on field notes + today's banding returns. Looked at my watch + promptly sacked out when I realized it was 2:30 am. Time flies! No wonder I felt tired!

March 29 Green Is., Kure Atoll

Up at 7 a.m. Spent all morning making a census of Laysan Albatross chicks in the area not censused by Chor Robbins during his February visit. It takes forever and a day to census each area because of the dense scaevola. While counting I checked band numbers on both species of albatross and ~~marked~~ marked the birds with red + blue spray paint. Made roost counts of Red footed Booby + Great Frigate in both roosting areas. Returned to barracks area + explored some more shearwater burrows but still could

Hackman, C.V.
1967

Field Notes

March 29 Green Island, Kure Atoll

not find any chicks or eggs. Spent the rest of the morning chasing down Laysan Albatross + checking numbers.

Spent an hour after lunch making a survey of island vegetation and found many introductions - several that were quite a surprise. I didn't go too far from the barracks because it was threatening again (as did rain between 1:30 and 3:30 p.m. - so I did some paperwork). After the rain stopped I spent another hour and a half chasing birds on the other side of the runway.

Vegetation here is thick + lush, probably because of the frequency of rain showers. (2-3 per day). Verbesina sp. has almost completely taken over the NW sector of the antenna field where it grows to a height of 1 1/2 to 2 1/2 feet in a thick mass. The species is also beginning to appear in the south antenna field in a few areas.

In the antenna, about 150 feet inland from the radar reflector, forming a right angle with the reflector and the main antenna mast, I found a patch of mint. Square stemmed, white flowered, about 1 1/2 feet high. There were two main clumps and many sprouts over an area of about 10 feet in diameter. The plant did not have a pleasant odor as some mints do.

An incomplete plant survey turned up:

- 1) Scaevola - common + lush, covers about 1/2 of island in dense, almost impenetrable thickets. Not flowering or in fruit.
- 2) Verbesina sp. - knee high through large segments of the north antenna field. Spreading into other areas. In full bloom.
- 3) Euphorbia sp. - small plants scattered in barracks lawn - an introduction?
- 4) Eragrostis sp. - the large native species, here and there in clear areas.
- 5) Thistle sp. (San Thistle?) - scattered around in cleared areas near barracks (commonest) - also occurs along runways.
- 6) Cyrtodan sp. - in barracks lawn + in cleared areas.
- 7) Procyon - toes - scattered in barracks lawn - introduction?
- 8) Trinobasis - in full bloom, scattered around island in clearing a basic nest material for boobies + frigates.

Hackman, C.D.
1967

Field Notes

March 29

Green Is., Kure Atoll

9. Boerhaavia sp. - common in clear areas throughout the island. Used in frigate + Red f. Booby nests.
10. Chenchrus sp. (Sand bun grass) - Several plants found in barracks lawn - introduction.
11. Oxalis sp. - spread throughout barracks lawn - introduction.
12. Casuarina sp. (Ironwood) in barracks area - introduction.
13. Tournefortia messerschmidia - Several large trees along beach crest.
14. Solanum species (black berries, pale lavender flowers) - common in cleared areas - blooming + fruiting at present.
15. Coconut (Litchardia sp?) - introduction around barracks + in several other areas (near Bu. + more Hotel picnic area).
16. Cordia species - several near basketball court on the edge of the antenna field.
17. Sesuvium - ~~the~~ line species - small, slender leaves, thin petalled flower with 5 lavender flowers that are white at the base, stamens yellow (5) 5 sepals alternating with petals. Found on roadway to plane spot near diesel fuel tank - blooming.
18. Nightshade species - small plant with small white flower with yellow pistil, 5 petals. Leaf typical nightshade leaf. Family common in cleared areas.
19. Morning Glory species - common along edges of Scaevola around the perimeter of the antenna field. In bloom.
20. Grass sp. (Eragrostis?) small plant located on north side of basketball court. Fruiting head is purplish as it ripens, leaves, small, long + pointed.
21. Grass sp. like common crab grass, 3-5 merged head, head flat + heavy, leaf thin bladed + hairy. near north side of basketball court.
22. Plant similar to Dairy Fleabane that occurs on Atlantic coast (Maryland) - located between barracks + bird shack. There may be several other species of grass and composites here ~~that~~ because I have trouble identifying species of both - especially with no references. There are also several ~~ex~~ species of shrub that have been introduced around the barracks that I could not identify although all are fairly common in Honolulu.

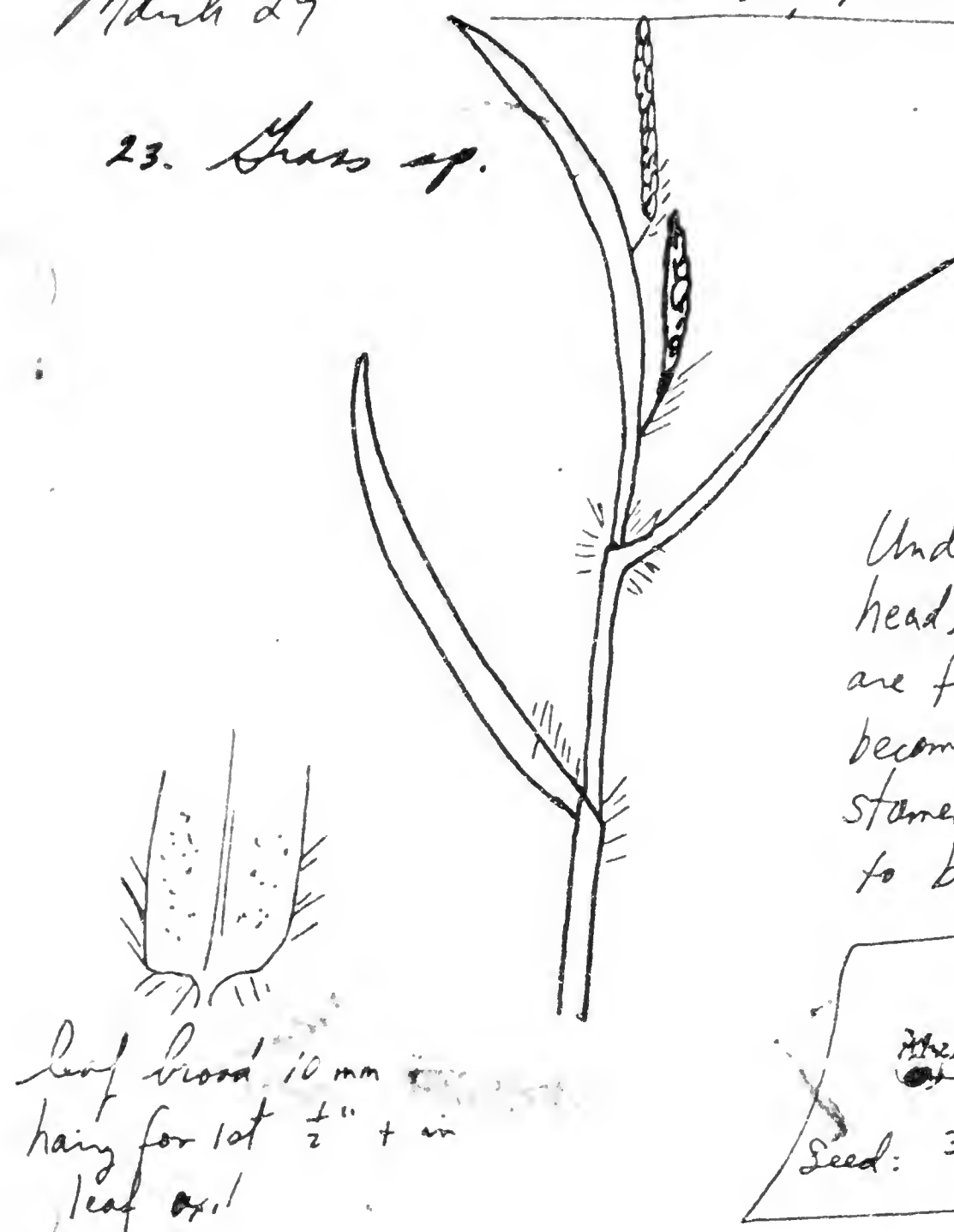
Hackman, C.D.
1967

Field Notes

March 29

Green Is., Kure Atoll

23. Grass sp.




Pubescence in leaf + fruit axils
Undersides of leaves not hairy. Fruiting heads consist of two rows of seeds that are flat and ragged edged + tend to become purplish. Could not count stamens accurately but there appeared to be 3-5 on each seed.

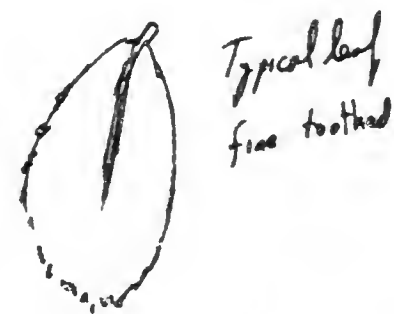
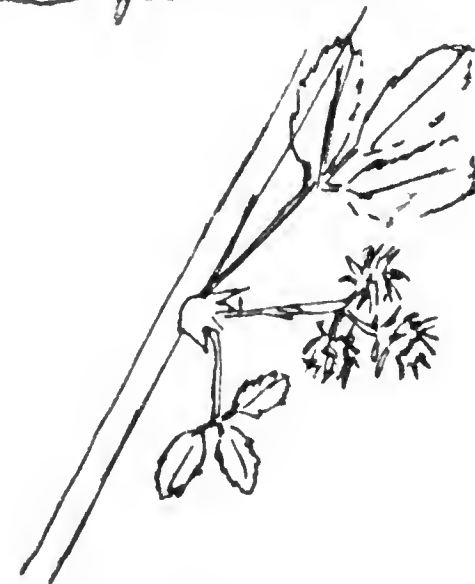
stamens purplish
Seed: 3-5 Stamens 2.8 mm wide

Fruiting heads about 20 mm long. Saw plants with 2 to 3 heads per stalk. Plants averaged 7 1/2" from ground to top of fruiting heads.

24. Sea Grape (Miranda sp?) behind barracks - several

25. Unk plant - no square (grooved stem)  (1.55 mm wide) - 3 leaves, toothed (Banksia sp?).

Medicago sp.?



Typical leaf
fine toothed

terminal leaves (12.45 mm to 16.85 by 24 mm)

fruit 7.6 mm wide - fruits appear to consist of 3 whorls (+ can be unwound). Seeds like tiny lima beans, shiny. Fruits flat on top.

Not flowering

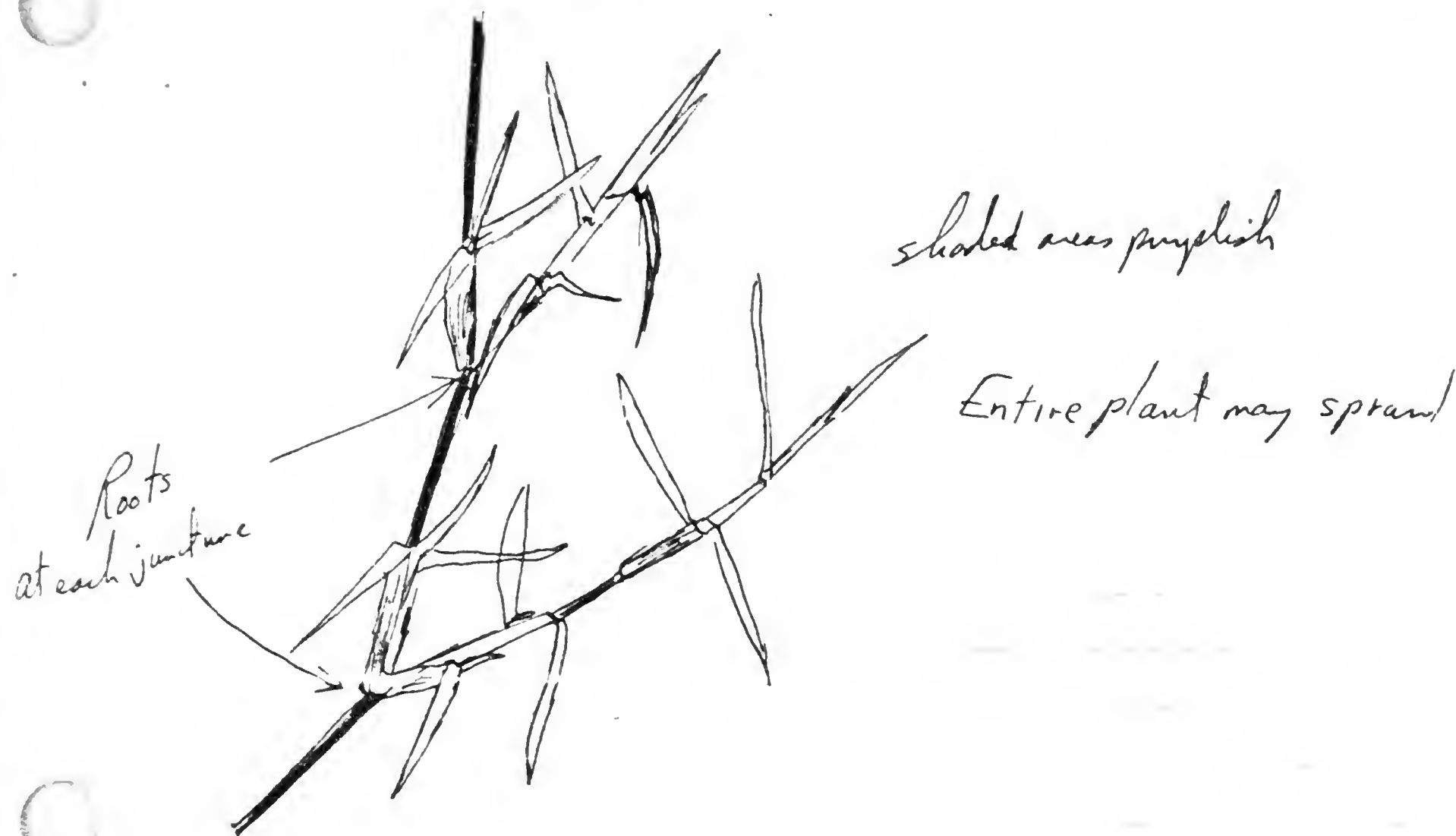
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1967

Field Notes

March 30

Green Is., Kure Atoll

26. Grass species - flat, clings to ground, throws out many runners stems dark red, round. Stem 1.1 mm.



There were several other plants that I put off doing anything about until the last minutes and then didn't have time to tend to. One of these looked like a dandelion but the flower was a light yellow. I couldn't decide whether this was simply the thistle or was actually another plant species. I had planned to work these up in the afternoon but the chiefs insisted I knock off and have a few drinks with them before departing. In fact, they said if I didn't come willingly they'd carry me so I went. She shot the rest of the day until the plane left.

The plane arrived at 2:15 and left at 3:25 p.m. arriving on Midway at about 3:48 p.m. Called Dr. Pyle + finally reached him at 6:30 p.m. + got a few things straightened out about my orders which still have not arrived here on Midway which leaves me in something of a fix if they won't accept the account + order numbers read off by Dr. Pyle. If they don't accept these I may be here until next Wednesday or longer.

Hackman, C.D.
1967

Field Notes

March 30

Kure Island

Summary of odd + ends:

Rat population - The station has been setting out bait stations for the past several months. It appears to be bringing the rat population down to an acceptable level. All garbage is being disposed of in the water off the end of the island which further cuts down on food available for the large population that existed.

Dead rats were found in many areas - particularly on the roadways and along the edge of portions of the runway. Rats were observed at night but not in particularly large numbers. On the average about 5-10 rats were observed per night while banding in the antenna field and in the Scaevola near the barracks area.

No dead birds, that were attributable to rat kills were observed anywhere on the island. Nor were any live birds observed that appeared to have been molested by rats.

March 30
C.D. Hackman

Hackman, C.D.
1967

Field Notes

March 31 Sand L., Midway Island,

Up at 0700 and directly over to OOD + base security to check on to the island. Then to Mr. Tennyson, Industrial Relations, Room 209 in the Administration Building to attempt to line up a seat on Saturday's log flight to Honolulu. He knew all about me (the Kinzle had warned him that I might not have orders) and was very accommodating. He took the set of encrypted orders I had written up on SI letterhead (from yesterday's phone call with Dr. Lyle) + told me to be at the terminal before 12 noon tomorrow in order to check in.

Returned to BOQ to find that Dr. Lyle had called. I called him back + learned that a telegram had been sent from the contracting agency to verify the orders + had sent info copies to several addresses as well as to the CO of the base. I called Mr. Tennyson + told him of this.

I then picked up binoculars + camera + walked to the run off area near the end of the runway to check on the ducks, shorebirds + seals there. Mainly just killing some time. Returned from run off area around 2 p.m. + was almost back to the BOQ when someone called + there was George Yang in a pickup truck. We went out at night + got some specimens but had to quit because it got so damned cold. We were both chattering away around midnight + finally said heck with it. We had several interruptions last night - people checking to see if we belayed out on the runway areas at night. Each one turned on his high beam + just sat there while birds ran in all directions like mad. We finally quit from cold + frustration.

April 1

Up at 7:45 am, met George at 8:30 am + we then made the rounds for several hours: Hospital, Security, etc. Around 10:45 we went out along the beach near the dunes + worked over a total of 44 Black-footed Albatross in 1 hour 1 minute before exhausting the local supply. George said these were the only ones around so we knocked off. In all I helped George pick up about 130 samples. Could have had many more if things had

Hackman, C.D.
1967

Field Notes

April 1

Sand L., Midway Is.

Took luggage over to air terminal + checked in a 9 am before going out to work the Black-foot population. I understood personnel leaving the island should check in as early as possible in the morning. Not to do so is to risk being ~~stamped~~ bumped off of the flight.

The Northwest Airlines plane was late as usual so George + I killed some time by eating a couple of hot dogs at the chiefs club + then watching several innings of a softball game. The plane arrived at 3:10^{pm} about 2 hours late. It took off again for Honolulu at 4:45 p.m. The plane flew at 13000 feet + hit a little rough weather for about 45 minutes. Whole trip was cloudy + overcast. We passed by some towering cloud formations - several higher than the plane.

Arrived in Honolulu at approximately 10:20 pm + took about 1 hour to get off plane + clear through U.S. Customs.

Miscellaneous:

Saw what must have been an enormous ray apparently basking in the shallow portion of the lagoon near Easter Island as the plane took off.

Saw one very albatross strike (Laysan) by the left wing trip shortly after takeoff about 100 feet off the ground.

Hackman, C.D.
1967

Species Account

Glaucous-w. Gull (Larus)

March 15 Gardner's Pinnacles

One bird observed by Gene Knolle as ship
passed to the north of the island.

Hackman, C.D.
1967

Species Account

Kittiwake, Black-legged

March 28 Green Island, Kure Atoll

Saw a gull, about King-billed size, while walking
along the north beach to check out the seal population.
The bird was an adult, had the ink-dipped wing tips and
very dark feet. There was no terminal bar on the pure
white tail. There was a dark area on the head behind the
eye (indicating that this is a dark-headed species). The
bird was glimpsed from the side for only a second before
turning to fly directly away to sea. I did not have
binoculars with me.

March 29 Green Island, Kure Atoll

Found a dead gull along the runway around noon.
This bird matches the one observed yesterday in every
detail. This bird (USNM 53002) had been dead for
some time since it was completely dried out.

Hackman, C.D.
1967

Species Account

Glaucaus Gull

March 31 Sand Island, Midway Atoll

Found the badly mutilated carcass of this gull on the northern end of the pond area near the one-run portion of runway. Took photograph but only collected 1 wing since the specimen was still a little ripe.

Hackman, C.D.
1967

Species Account

European Widgeon (Mareca penelope)

March 25 Sand Is., Midway Island

Present on the island according to Charles S. Robbins but not in the one-run area on this date.

Hackman, C.D.
1967

Species Account

American Widgeon (Mareca americana)

March 25 Sand Is., Midway Island

Somewhere on the island according to Charlotte S. Robbins, not in the run-off area from the runways on this date.

Hackman, C.D.
1967

Species Account

Pintail (Anas acuta)

March 11 Ten Is., French Frigate Shoals

One battered carcass and a wing (from a second bird) were pointed out by the Coast Guard personnel and are presumed to be of this species. The CG said that 19 ducks arrived in a flock and that a number of them died shortly after arrival.

March 25 Sand Is., Midway Island

Three in the remaining water in the run-off area from the runway. Chan Robbins said there were 5 or 6 more ducks around but that they spent most of their time up around the quarters begging for ants.

March 31 Sand Is., Midway Island

Three flying near end of runway (northern end). None observed in pond area.

Hackman, C.D.
1967

Species Account

Peregrine Falcon (Falco peregrinus)

March 24 Midway Atoll, Sand Island

1 Adult male observed flying over the downtown section of the island accompanied by about 150-200 White Terns. Charles S. Robbins has observed this bird on numerous occasions on various parts of the island since his arrival here in January of this year. It frequented the ~~area~~ over-run area until the water dried up (probably eating shorebirds). Since that time it has been circulating around the atoll. One of the pilots informed me that he had observed the falcon eating a rat along side the main runway last month.

Chan Robbins informed us that the way to tell the hawk is around is to watch the White Terns. These terns escort, and fuss at the falcon, wherever he goes.

March 30 - 31 Sand Is., Midway Atoll
Not observed during this period.

Hackman, C.D.
1967

Species Account

Canary

March 25 Sand Is., Midway Atoll

Saw 4 of the 9 or 10 birds that are supposed to be on Sand Is. - the only canaries living in the ~~United States~~ wild in the United States. One bird was in full song at mid day. These birds look like the common cage canary but their wings are white. The song is the sweetest I've ever heard - full of trills - and is much fuller than that of caged canaries. The birds were in a grove of Ironwood when observed.

March 30 - 31 Sand Is., Midway Atoll

Cool weather. Not singing. Not observed during this period.

C.D. Hochman
1967

Species Account

Pomarine Jaeger ()

March 6 Oahu to Kawai

25 birds seen (only one adult) mostly within
2 1/2 to 3 hours out of Honolulu. One individual
followed the ship from 11 am until 3 pm. before dropping
off and flying in the general direction of Oahu.

Hochman, C.D.
1967

Species Account

Ring-billed Gull (Larus)

13 March Trig Island, French Frigate Shoals

1 bird in 1st winter plumage flying around island
several times. Bird flew directly over head.

14 March White-Shouldered, French Frigate Shoals

1 bird in 1st winter plumage flew over island several
times. Also seen on the beach several times. Shot at
+ missed.

23 March Pearl + Hermes Reef

Arrived back on ship at 2:50 p.m. + stowed all gear. At 4:15
when Gene Kiddle returned to ship there was a gull, presumably of this species flying
around the ship. The shotgun was cracked away.

~~1st winter plumage - 1st adult - 1st adult~~
~~which looked like Pomarine~~

seen by Gene Kiddle as we passed to the north

C.D. Hackman
1967

Species Account

Laysan Finch (Pittirostra cantans)

March 18 Laysan Island

Late in the afternoon I walked into the Ironwood (Casuarina) where all of the Hawaiian Noddy nests are located to place some of the captured Laysan Finches in one of the dead nets we were using for carrying cages. The noddies all flew out of the tree as I came into the area. I wasn't under the tree for more than two minutes when I observed a female finch about five feet away. ~~She~~ She landed in a low noddy nest and without delay broke the egg open and ate a little. The female was promptly chased away from the nest by a male who then quickly consumed the entire egg shell and parts of the contents. It took the bird only five minutes to ~~consume~~ completely consume the entire shell.

After dark I returned to the tree to measure the noddy eggs and found a banded male sleeping on top of an unused ~~the~~ Hawaiian Noddy nest. The bird had its head tucked in and was so soundly asleep that I picked it up, read + recorded the band + replaced it on the noddy nest before it became aware of what had occurred. The bird woke up + frantically left the nest.

Birds appear to be common + evenly distributed throughout the island. Total population - several thousands.

March 21-23 Southeast Is., Pearl + Hermes Reef

About 95 birds released on this island around noon on the 21st. One found in sick condition with a wing injury (male) on the morning of the 23rd. Numerous birds observed feeding on Tribulus species, + Cynodon during the visit.

C.D. Hackman
1967

Species Account

Laysan Duck (Anas laysanensis)

March 18 Laysan Island

Only 15 ducks were visible in the lagoon by binocular check from the campsite at 5:30 p.m. Two other birds were observed in a tidal pool on the NW shore by John Macjolek around 4:30 p.m. The crew caught 12 ducks to be transported to Pearl + Hermes Reef.

March 19 Laysan Island

A binocular count of the East, north + west shores at 1 pm accounted for only 8 birds.

March 21-23 Southeast Is., Pearl + Hermes Reef

12 birds (5 female) released around noon on the 21st. The second bird released flew out to sea and was joined by the first one released. All subsequent birds were wing clipped before release. Four were observed ~~on~~ roosting on the night of the 22nd. One drake was found dead on the shore ~~area~~ (north) on the morning of the 23rd.

March 22 Sandspit near Grass Is., Pearl + Hermes Reef

One wing clipped drake was on the north point of this sand spit along with 14 seals. The bird eluded capture by pattering into deep water and was last seen swimming toward another sand spit in the direction of Southeast Island. This bird appeared healthy, but since it was wing clipped its chances of survival in open water appear to be quite small owing to the large number of white-tipped sharks in the area. This bird may have wandered off of Southeast Is. + been pushed down to the sandspit by strong wind + currents moving in that direction. The sandspit was about 2 1/2 - 3 miles from Southeast Island.

C.D. Hackman
1967

Species Account

Hawaiian Monk Seal

March 8 Nihoa Island

2 adults in cove near landing on south side of island

March 9 Nihoa Island

1 adult in cove near landing as we hauled gear down the cliff.

March 10 Necker Island

Ten adults and 1 subadult were sunning themselves on the rocks near Shark Bay. None were tagged.

March 13 Trig Is., FF Sh

Tagged: 8 pups (2 male, 4 female, 2 unk sex)

recorded: 7 - adult female (5 with pups)

1 - adult male

2 - subadult males

1 - subadult female

Total Tagged: 8 pups + 3 subadults

March 14 Whale-Shake, FF Shoals

AF - 6

Unclassified adult - 1

Subadult male - 4

5 Pups tagged - 3 male + 2 female

4 subadult males tagged

1 recovery (USNM) - retagged with metal clip

March 14 Trig Is., FF Shoals

Tagged: 1 additional pup just born - umbilical cord still attached - ♂ gives 1 additional adult female for total of 8 adult females on Trigell with pups.

March 11-12 East Is., FF Shoals

Tagged 5 pups + 2 subadults. Total population: 5 pups. 4 unk. subadult, 1 male subadult, 4 AF, 2 AM. 4 unknown adults.

Hackman, C.D.
1967

Species Account

Hawaiian Monk Seal

March 19 Laysan Island

Made a complete survey of the island beaches which took $3\frac{1}{2}$ hours starting at 8:45 am:

AM - 45

AF - 54

Subadult male - 30

Subadult female - 22

Subadult unknown 7

Adult unknown 13

Male pup 12

female pup 7

Unknown pup 9

199 seals

Of the 54 adult females, 18 had small pups and 6 had large pups.

One subadult male was found along the northwest beach that had suffered a severe back injury. Somehow or other it had torn a great gash in its back (coral? or shark?). This was rotting and appeared to have a massive infection. The seal could not move its hind quarters very well and made no effort to get away from us even though it was only about 4 feet from the water.

A subadult male was also found dead & appeared to be freshly dead. An unknown age subadult and a badly decomposed adult and a small pup were also found dead on various beaches.

One adult female was observed on the west beach that was in the process of giving birth.

Tagged 33 (20 pups)

Hackman, C.D.
1967

Species Account

Hawaiian Monk Seal

March 20 Lisianski Island

| | |
|-------|------|
| AM | 54 |
| AF | 40 |
| AU | 8 |
| SM | 3 |
| SF | 5 |
| YM | 7 |
| YF | 5 |
| UY | 2 |
| UU | 2 |
| Pairs | - 11 |

1 After AF w/ after birth (?) from vagina.

Tagged 37. Six pups

March 21-23 Pearl + Hermes Reef

Hackman, C.D.
1967

Species Account

Hawaiian Monk Seal

March 24-26 Midway Atoll
None observed.

March 26 Kure Atoll

14 Adult unknown and 1 subadult unknown (?) observed from the plane on a small sandy islet to the south of Green Island while the plane was making its final landing approach. Also counted the following while checking the beach on 2/3rds of the island before dark:

SU (in water) - 1 + 1 on sand spit

AU (in water) - 2 + 14 on sand spit

AF w/ pups - 4

AF - 1 (bleeding from vagina)

AM - 1

AU (dead + floated) - 1

Pups - 4

Coast Guardsmen informed me that at least 3 pups have died on the island this year. One seal also had twins but both died the next day.

March 28 Kure Atoll

Saw 5 seals on north beach this morning:

AM - 7

AF } very fat + sluggish, pregnant?

AF - in scaevola.

AU - 2 in water.

Fred H. H. H.

March 21 South East I., Pearl + Hermes Reef

Arrived off the atoll at 6:50 am and jinked around
Looe. ... it quite a while. Finally got into
the lagoon ... 9 am. + had can ...
9:45 am. Spent until noon banding + releasing 'Laysan' Band
and Laysan Finch ...

The first two ducks were shot off and headed straight out to sea - out of sight. We wing clipped the rest of the birds that were released. None of the Styrer Finches made any attempt to leave the island. Of the Longson Finches, males were color banded red and females, color - banded blue.

The weather looked threatening all day and was quite cool (about 64° with a stiff breeze) and we all froze toward evening. Built a nice camp bonfire and sat around it while eating lobsters cooked in butter and chili and beans. It was a delicious dinner with the lob. Two country of John & Dick who did some dining this afternoon and managed to capture about five big lobsters.

Around 12:30 p.m. here, Ernie + I went around the island to tag seals + turtles. This took us about 3 hours because we went into the lagoon at some time, poking around on the reef. Ernie caught an octopus, that was right on the shoreline, after a lot of pulling and tugging and took it back to camp for fish bait. I spent about 1 hour busting open a coral head from which I obtained about 11 different types of crabs - all quite small.

Around 3:30 we returned to camp. Bob and I spent about 2½ hours pulling up mustard weed just to see how much work would be involved in pulling all the plants on the island up. We pulled up an awful big pile of mustard but hardly made a dent in the overall area. Gene said the military brought it here on one of their frequent visits. It appears that the mustard is rapidly spreading and that certain plants (Baccharis and Tribulus) cannot compete very well with it. Most plants are in full bloom at the present time.

After dark Steve + I went around the island checking birds for
bands. Didn't have much luck with anything other than those stupid
Black-footed Albatrosses. Every thing else left while we were still quite
a distance away. Even with an overcast sky it is much too light for
effectively capturing most of these birds. We went around the island
1 1/2 times + didn't manage to capture much of anything.

Wachman, C.D.
1967

Field Notes.

March 21 Southeast Is., Pearl & Hermes Reef
~~Trinidad~~ Florida

It sprinkled several times while we were going around the island. It looks very much as if we're going to have a rain. At the present time (11:45 pm) it is raining light and the wind is from the north. The sky is extremely dark to the north and the south becoming brisk.

I gave up on the birds around 11 p.m. She quit around 10 p.m. & went back to camp while I chased around the island again to no avail. Everything on this island is spooky for some reason or other. Couldn't get within 100 feet of most they landed. Noddy or White-capped Noddies + only managed to capture 2 Blue-faced Boobies out of about 17 tried for.

March 22

It took about 10:00 P.M. to get the
one wanted to get up because it was so chilly outside. A couple
of hours could finally get up and built a fire. The fire is not
to the 1st and 2nd the 3rd and 4th. It took 10:00 P.M.
(which we could see off in the distance in several directions) as
stayed around camp doing little odds + ends.

General I am I was not counting nests & measuring a few eggs.
Saw a Red-bellied woodpecker to go along with the birds. The
Seal & Kitting did not help stage sealing for the. We left camp
at 8:15 and arrived at Ft. Hesse at 11:00 am. The
worked Kitting and Seal did not help continue to camp
4 p.m. On the way back we stopped at several seals & birds
to count seals & turtles.

Today a new tagging system today. Maxine, Sam & I left
to fill up and off the tag boat down below. I had the seal
so Sam did this (along with Eric) and I put the tag on the
fluke. The day before (I am sure!) I had had several seals
left one up & come out under my side of the tags my weight
didn't seem to slow the seals up one bit. Today, with the two
heavy weights working the tags there were no problems.

The evening before we had lobsters (off the reef) fried in butter for dinner. I was with some beer - Dr. Child and I.

March 22 Southeast Island. P+H Reef

It was a delicious + thoroughly enjoyable meal. Tonight Eric + I combined talents and fixed a dinner consisting of freeze dried pork chops, pot. toes, apple sauce + some fish (off the reef). It was pretty fair but didn't compare with the lobster meal of the evening before.

Just before dusk Bob + I banded about 200 Black + Albatross chicks with his hands.

After dark with the moon rising 3/4 full (it cleared out at 2:30 in the afternoon) it was impossible to capture very much. I saw many birds with bands but couldn't get close to many of them. The Sooties were down on the ground in several places but were difficult to capture. By running through them with a net and by standing in one place waiting until they flew by I was able to capture 8 Banded Gulls. I saw many more banded birds than there but could not get close enough to capture them. I made 5 circuits of the island + then settled down for about 2 hours before finally giving up completely + searching out. Caught the following banded birds: 11 Red-f. Booby, 1 Brown B. Petrel, 8 Sooty Tern + 1 Laysan Teal between 8:30 pm and 1:45 am. I didn't try to band a because this would have represented fatality at its best.

While returning from seal + turtle tagging on the other island we stopped at one of the many sand spits because it had 9 visible seals (actually 14 were on the spit). I jumped out of the boat in my bare feet + walked down the beach to the far end. Near that far end there was a large area covered with jagged coral rubble. In the middle of the coral rubble sat one of the Laysan Teal we had wing-clipped today + released on Southeast Is. I got within 3 feet of the bird before it patterned away into deep water.

Apparently the bird had wandered off of Southeast Is. + been blown down to this sandspit (about 4 miles from Southeast Is.)

Got up at 3 am + changed the batteries to the light used by the ship for bearings.

March 23 Southeast Is., P+H Reef

Woke up around 4 am to find everyone shuffling around mumbling. They had gotten them out of bed to pull the sheet high on the beach. They all shuffled back in (with something to themselves) around 4:15 and went back to sleep.

Got up at 7 am + sat around the morning's work until about 8 am. Here, the Eric + I then spent the next two hours counting albatross chicks.

After finishing with the albatross chicks I got out all of my gear + made a circuit of the island to measure, measure eggs, describe nests + weigh chicks of several species. Finished around 1:30 and returned to camp, ate lunch + helped break camp.

The whale boat came in at 2:30 and John + I returned to the ship with the bulk of the gear. John + I spent the rest of the afternoon ~~and~~ sorting gear + repacking. When Gene + the others returned we all pitched in and stored the rest of the gear. They had it up on the island in order to spray the mustard that was growing so profusely there.

We were later joined by Michael + his group.

Spent the rest of the evening until 11:30 catching up on field notes + species accounts.

Odd + ends:

While on shore I had yesterday I built down to measure a frigate egg and felt something crawl on me. The area near the frigate nests was infested with ticks. I collected a few of the ticks but didn't have time for very many. In the short time spent on shore (about 40 minutes) I was bitten at least 4 times - several behind my right knee. Found several more ticks later on. These are the first and only ticks I've seen all this trip. Have checked all other islands but haven't seen any. Couldn't find any ticks either. John said he found one crawling on his leg on Southeast Is. but I couldn't find any on either of the two nights we were there.

Itinerary - March Leeward

Depart Honolulu 10:15 am March 6
 Arrive Nawiliwili Harbor 8:30 p.m. March 6
 Depart Nawiliwili Harbor 8:15 a.m. March 7
 Arrive Nihoa Island 0530 March 8, land on island 0945
 Depart Nihoa Island 1040 March 9
 Arrive Necker Island 10:40 March 10
 Depart Necker Island 5:15 p.m. March 10
 Arrive French Frigate Shoals 8:30 am March 11
 Depart French Frigate Shoals 5 p.m. March 14
 Arrive Gardner Pinnacles 6:30 March 15
 Depart Gardner Pinnacles 8:45 March 15
 Arrive Laysan Is. 8:30 March 16 landed, March 18
 Depart Laysan Is. 2:30 pm March 19
 Arrive Lisianski Is. 9:00 am March 20
 Depart Lisianski Is. 4:30 pm March 20
 Arrive Pearl + Hermes Reef March 21 10 am
 Depart Pearl + Hermes Reef March 23 2:30 pm
 Arrive Midway Island March 24 2:15 p.m.
 Depart Midway March 26 11:30 am
 Arrive Kane March 26 12:00 pm.
 Depart Kane March 30 3:30 p.m.
 Arrive Midway March 30 3:55 p.m.
 Depart Midway April 1 4:45 pm. Midway Time
 Arrive Honolulu April 1

1967

March 23 Southeast Is., Pearl + Hermes Reef

odds + ends:

When we first arrived here we found a note from
 Chan Robbins who had come down from Midway by helicopter.
 It seemed they were caught in the storm with their plane
 that down + had to spend the night on Necker Island inside
 the helicopter. They had started toward Midway but were
 forced back by strong headwinds. A plane had to fly
 from Midway the next morning to drop fuel + oil for the
 choppers so they could make the return trip in the helicopter.

This morning I saw an orange streamer frigate at
 close range flying up from an area in which a number of nests were
 located. I waited around the area but the bird did not return. It
 was impossible to determine if this bird was just looting in company of
 the breeding birds or whether it was actually breeding on Southeast Is.

Left the island to return to the ship at 2:30 pm.
 along with John and the major portion of our gear. The
 engine + Dick remained behind to spray the mustelid
 in hopes of eradicating it.

As soon as I got on the ship I unlocked my trunk
 back into the trunk + tried to pack all of my gear. When
 I returned with this gear. When I returned he
 saw an adult Ring-billed Gull + yelled for me to
 bring the shotgun. I was down in the forward part packing
 my second trunk full of gear + no one seemed to know where I
 was. Not that it made any difference since the shotgun + ammo
 were both stored down in the bottom of the first trunk that had
 been packed.

At 6 pm. the ship pulled anchor + steamed toward
 Midway Island.

Hickman, C.D.
1965

Journal

February 26 Fakaofu ^{Atoll} Tokelau Islands

island on which there was a hut large enough to accommodate our party of 9 (we picked up 2 more men on the way) and the native party of 4. At 2:30 we finally arrived at our destination and quickly dispersed in order to run a survey.

The first bird seen and identified, as we landed, was a Black-naped Tern - the first ever recorded on the ATF trip. Other species recorded during the afternoon: Pacific Pigeon, Reef Heron (both color phases), Golden Plover, Ruddy Turnstone, Sanderling, Bristle-th. Curlew, Wandering Tattler, Hawaiian Noddy Tern, Common Noddy Tern, Lesser Frigatebird, Red-footed Booby, Brown Booby, Sooty Tern and Fairy Tern.

During the remainder of the afternoon we dispersed and worked on the following activities: Larry + Max - shooting birds, Paul - botany, Ralph - Mammals, Dick - collecting and surveying the reef, me - insects.

All of the islands we have been able to, and expect to be able to, visit have a limited variety of plants. Coconut palms are the basic plant on each island. Several areas have a few *Pisonia* trees. *Scaevola* and *Messerschmidia* are common along the beaches of all islands and are scattered throughout the smaller islands. *Pandanus* is also a fairly common plant. Some species include a grass species, *Trinifolia* sp., *Polypodium*, Bird Nest Fern, *Boerhaavia* (red stemmed + lavender flowered) and a small sedge. On most of the larger islands are a pitia in which Taro, Banana and several other plants are cultivated in soil that has apparently been brought in from Samoa.

Finally, parked at 12:30 after hunting insects all day.

Hickman, C.D.
1965

Journal

February 27

Fakaofu ^{Atoll} Tokelau Islands

One plant, that is located in several of the Taro patches, looks quite a bit like a *Boerhaavia* *Croton* *Pisonia* I think. Also ran into *Suaeda* (salt bush) and *Morinda* sp. on several of the other islands today. The *Boerhaavia* here has a deep red stem and the flower is white with a lavender fringe.

Spent the entire morning chasing insects and added 10 or so new species to those already taken. Was very surprised to find a hummingbird north here and finally succeeded in capturing one. Also found a green walking stick in a small clump of grass.

There is a grass species here that has leaves like *Digitaria* and a spike like that of *Lepturus*. This species grows in small clumps in the interiors of virtually all the islands we visited. It grows to a height of 6-12 inches. There are at least two species of sedge on these islands.

Around noon I returned to camp and found Larry and Max diving in the lagoon for fish they had poisoned. Since many small fish and a number of small eels were drifting down the channel I joined in with my insect net and managed to add a few more species to the catch. On looking into the two barrels collected I saw quite a few species we haven't taken before on our fish poisoning efforts in the Phoenix and Line Islands.

According to the natives who accompanied us Matonga Island is black with birds (and here they pointed out the Hawaiian Noddy Tern) at certain times of the year. It also seems that the Lesser Frigate and Sooty Terns nest here periodically. They could give us rather a month or a season for these nesting birds.

Hackman, C.D.
1965

Journal

March 2 Tokelau Is. ^{Atoll} ~~Mukunamu~~ Tokelau Island

The soil on Tokelau Island is extremely poor and sparse. It consists mainly of coral rubble with only small amounts of organic material. Consequently the vegetation, in many areas, isn't terribly impressive. Birds Nest, Polypodium and a fern that closely resembles the Christmas Fern (native to the ~~USA~~ eastern U.S.) and comprise the bulk of the ground cover. There is an extremely sparse growth of Boerhaavia (lanceolate variety) and a Lepidurus-like grass. Scaevola, I. messerschmidia and Suriana (salt bush) are common plants in the undergrowth with the latter two confined primarily to the beaches. The canopy is predominantly Cocos with varying amounts of Pandanus, Pisonia, Morinda and Ficus(?). Several Cordia alliodora were found. Other plants encountered include Eleusine sp., Cassytha filiformis and several herbaceous species that have been introduced. This ~~is~~ basic pattern holds for all of the islands on the atoll.

The Birds Nest Fern seems to be the primary source of organic soil. Each fern's root system is extensive. Under each there is a small pile of decayed plant material. This material is held tightly together by the extensive root system. The cocos debris and other plant material that fall onto the ground are not held together in any manner so consequently, due to the heavy annual rainfall, these materials are washed away as fast as they form. This washing away is facilitated by the extremely porous soil.

Black and White Photographs
Roll #1 Fakarua Island, Tokelau Group Feb. 27,
(36 exposure roll.)

- #1 Cassytha filiformis on Scaevola frutescens f11/
- #2 Closeup of #1 f16/60
- #3 Scaevola frutescens f11/125
- #4 Sedge + grass association f22/30
- #5 Taro patch with banana trees - cultivated - Taro 8' tall, banana 15 feet tall in 3 foot depression f11/125
- #6 Grass species - 1 foot tall f16/60
- #7 Shoreline of Matonga Island - typical of all 10/10 in the Tokelau group showing a canopy of Cocos + Pisonia, lower story of I. messerschmidia Scaevola and Pandanus + ground cover of ferns f11/250
- #8 Cocos and Scaevola in foreground - looking toward the windward reef f11/250
- #9 Pandanus framed by Cocos f11/250
- #10 I. messerschmidia f8/250
- #11 I. messerschmidia in bloom f8/250 (closeup)
- #12 Birds nest Fern + Polypodium f5.6/250
- #13 Pisonia + Cocos forest - ground cover entire of ferns f5.6/250
- #14 Birds Nest Fern on Pisonia trunk. Height of right hand fern (from ground) 12 feet; left one - 9 feet. f5.6/250
- #15 Maltese net in Pisonia forest - Al Samuelson in foreground. f5.6/250
- #16 Suriana sp. on small islet facing lagoon f11/250

✓
Photographs - Roll #1 (cont'd)

- #17 Suriana sp. (closeup) F16/250
#18 Pandanus fruit F5.6/250
#19 Polypodium sp. - closeup F8/250
#20 Triumfetta sp. - closeup - F8/250
#21 Sedge species - closeup F8/250
#22-25 Corn-like plant in Taros patch -
several angles + distances.

1965

March 3

✓
Atafu Island, Pacific Ocean

Atafu is very similar to the other two islands in the Tokelau Group in respect to the vegetation. The basic association is Coconut - Pandanus - Prisonia with some Morinda and Erinn sp. scattered about. Around the shores of the islands there is a belt of Scaevola and T. messembryanthus that is mixed with Suriana sp. at times. The ground cover consists of Birds Nest Fern, the common Polypodium and such plants as Boerhaavia and Lepturus-like grass. Triumfetta is a common plant in the interior of the islands. Basically there is a very limited variety of plants on these islands and the pattern of associations is virtually predictable.

Insect-wise this island, because of its recent rains, is probably the richest of the Tokelau Group. The leaf debris abounds with ants, springtails and other minute forms. Caterpillars are less conspicuous here than on the other two islands so, as the result, the vegetation is in far better condition. Because of the super. help (17 natives finally congregated around our campsite) collecting was something of a chore rather than a pleasure. This situation resulted partly from the fact that this atoll is fairly small and it took only 25 or 30 minutes to reach our islands from the village. On the other islands it took from 2 1/2 to 6 hours to reach our camp which resulted in almost no visitors at all.

Finally packed out at 12:30 a.m. after several hours of insect collecting.